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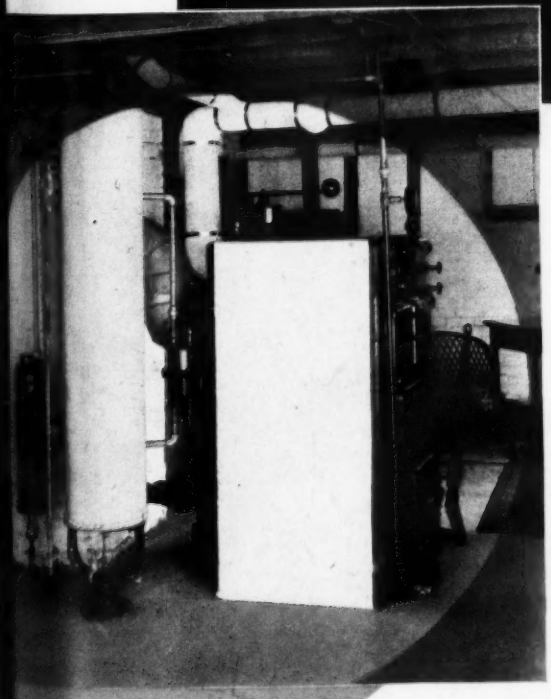
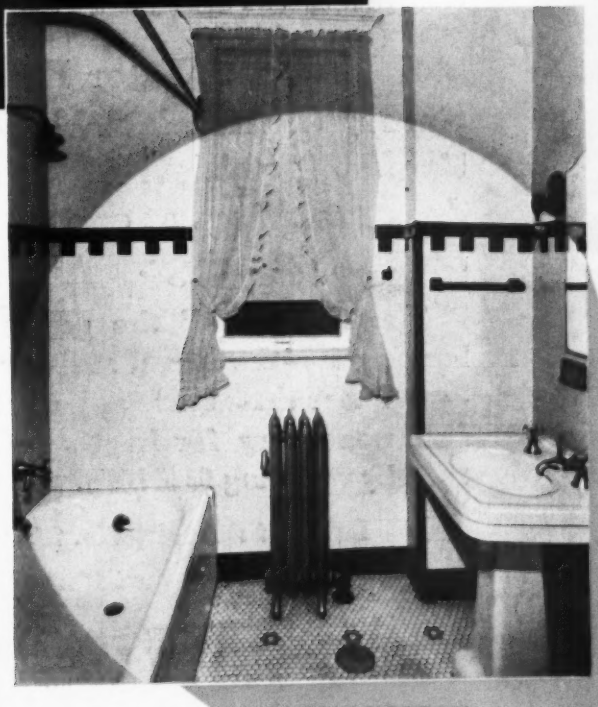
DOMESTIC ENGINEERING

Plumbing & Heating Contracting and Merchandising

DECEMBER 27, 1930



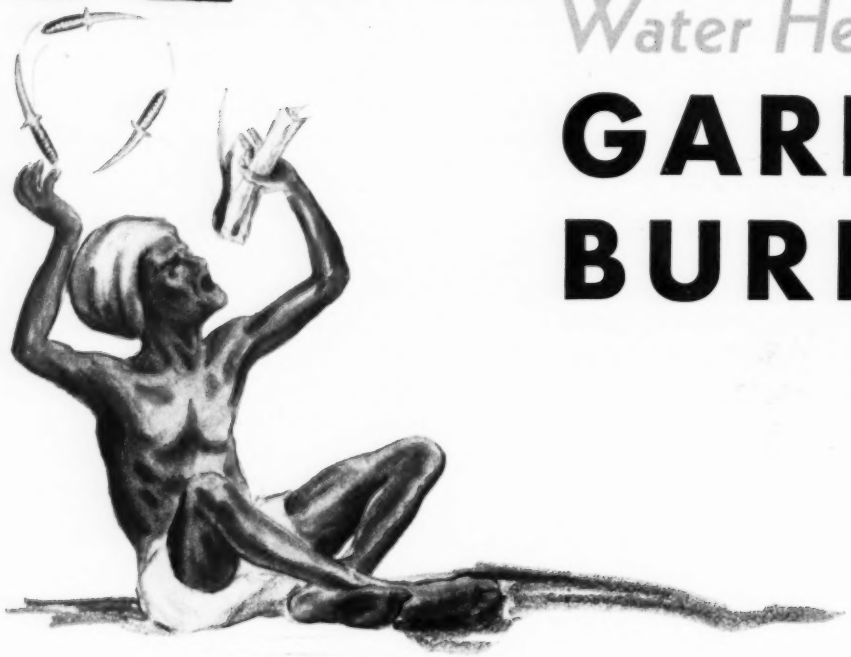


New Fixtures for Old

Plans and policies that win profitable business

KEWANEE

Water Heating GARBAGE BURNERS



East Indian Magicians juggle knives and eat fire at the same time. An amusing though useless stunt.

A Kewanee Water Heating Garbage Burner is A Modern, Useful, Magician for it also does two things at one time— ***both useful things.***

The fire "eats" the garbage by burning it—the clean, sanitary way—and uses that refuse as part of the fuel necessary for heating water, thereby reducing fuel bills.

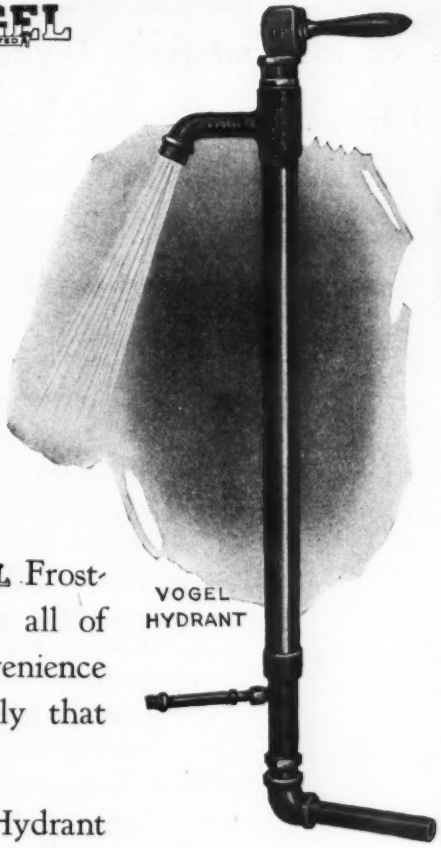
Details in Catalog No. 75

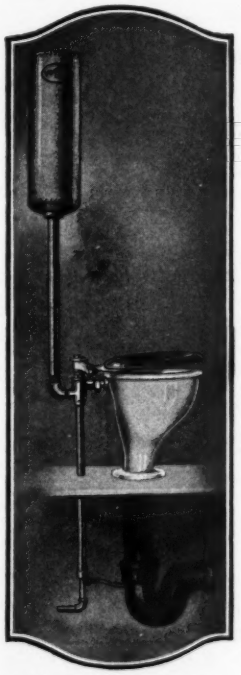
KEWANEE BOILER CORPORATION
division of American Radiator and Standard Sanitary Corporation
KEWANEE, ILLINOIS *Branches in Principal Cities*

MEMBER OF STEEL HEATING BOILER INSTITUTE

● **The "By-Pass" a Kewanee feature prevents the garbage and rubbish from smothering the fire. It burns completely without odor.**

THE BEST PROSPECTS FOR VOGEL FROST-PROOF HYDRANTS ARE YOUR CUSTOMERS WHO HAVE INSTALLED VOGEL FROST-PROOF CLOSETS . . .





Number One Vogel Frost-Proof Closet
Simple in operation. Sturdy in construction. Half a million in operation.

THEY know by now the economy and trouble-free service of VOGEL Frost-Proof Closets—and almost all of them would like the convenience of an outside water supply that will never freeze.

The VOGEL Frost-Proof Hydrant fills this need. Because it is made by VOGEL, they know it is the best obtainable—and the years of satisfactory service they have had from VOGEL Frost-Proof Closets make it easy for you to install other VOGEL products.

The VOGEL Hydrant has the same frost-proof, wear-proof valve as the VOGEL Closet of which more than 500,000 have been installed.

Write us for folders and blotters to send out with your mail. These are imprinted with your name and address.

See inside back page for VOGEL Seat-action closet Advertisement

JOSEPH A. VOGEL COMPANY
Wilmington, Del. **St. Louis, Mo.**

VOGEL PATENTED *Frost-Proof* PRODUCTS

DOMESTIC ENGINEERING

Plumbing & Heating Contracting and Merchandising

Established 1889

Vol. 133, No. 7 | December 27, 1930 | Whole No. 1933

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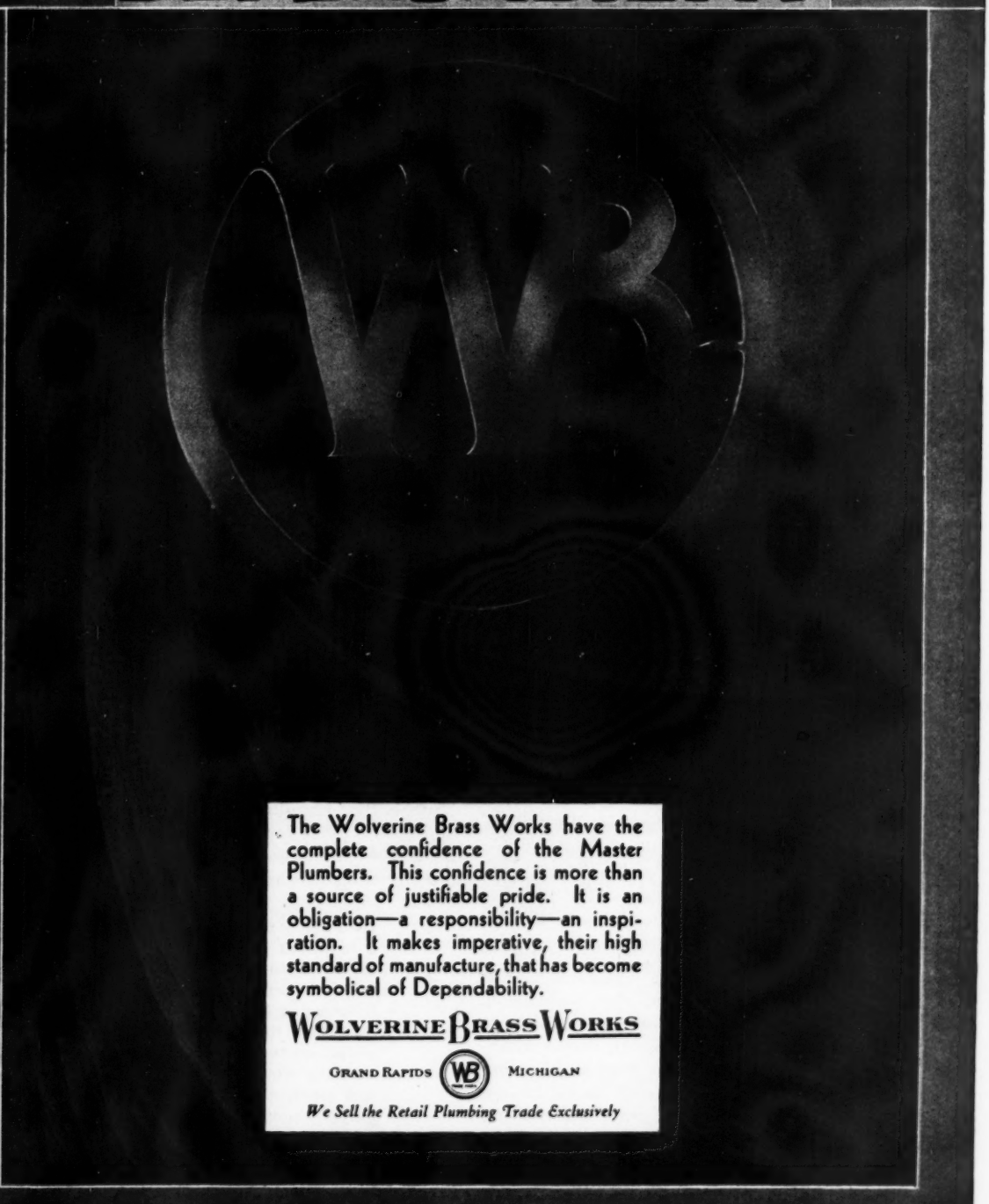
More Than 20,000 Copies of This Issue Printed and Distributed

WOLVERINE

THE SYMBOL OF DEPENDABILITY



The Wolverine Brass Works have the complete confidence of the Master Plumbers. This confidence is more than a source of justifiable pride. It is an obligation—a responsibility—an inspiration. It makes imperative, their high standard of manufacture, that has become symbolical of Dependability.

WOLVERINE BRASS WORKS

GRAND RAPIDS WB MICHIGAN

We Sell the Retail Plumbing Trade Exclusively

Between Ourselves

"NEW Fixtures for Old" is the title of the "Plumbing and Heating Merchandising" feature section in this issue—eight pages packed with helpful and informative data on remodeling. How to sell remodeling jobs —and how other contractors are selling them—along with the charts which make it easy to inspect the entire plumbing and heating system without overlooking anything.

Your Editor

ON THE front cover are four photographs. One set is of an old and a new bathroom. The other set shows a basement as basements usually look when there's a furnace in them — and the same basement after the cleanliness of radiator heat has been brought into the home. Rapidly the new ideals of comfort, convenience, cleanliness and beauty in plumbing and heating fixtures are taking hold in the homes of America. It would seem that people are really beginning to feel that they don't want to show 1890 plumbing and heating equipment any more than they want to be seen in a 1928 automobile. The material in the merchandising section shows how to go after this business of replacing old fixtures with new ones.

DECENTRALIZATION may be the ideal of our government in this country, but centralization is our practice in business—particularly in the mechanical services. We produce gas and electricity centrally to take the place of lamps and individual power plants. In many sections, heat for homes is produced centrally and distributed through mains. The installation described in the story of an entire town that is centrally heated is interesting, both as a system and because some nineteen hundred feet of main were welded. There is also special interest in the adaptation of warm air heating plants by the use of unit heaters.

NOT MANY of us are "Einsteins," and the subject of mathematics is not very interesting to the majority of us. Still it is something that we can't get away from very easily in this day and age. Especially is this true of those whose work is along technical lines — and the master plumber and heating contractor naturally falls into this group because of the important part that he plays in the construction industry of the country. He must know what a system will do and how it will operate, but before this is possible there must be a thorough understanding of the fundamentals as they form the foundation. Higher mathematics are merely a logical development of the fundamentals. The application of simple mathematics to the problems of the plumbing and heating contractor are discussed in the story called "Long and Short Methods of Solving Plumbing and Heating Mathematical Problems." You will find the information in this article mighty helpful in your work.

"BEFORE I overlook it again—I've been wanting to tell you of the improvement that I note in the set-up and what you might call the "get-up" of Domestic Engineering. It's really startling in its added attractiveness of type, spacing, headings, etc. We received a copy of the article on modernization by Rolland J. Hamilton of the American Radiator Co. the other day, and I was forcibly struck by the attractive appearance of it before I realized that it was the same article that had appeared in your magazine," says B. M. Blunk, master plumber of Louisville, Ky.

THE telephone is a pleasant instrument in the hands of some people —and quite otherwise in the hands of others. But in the business establishment, any one who uses the telephone must be prepared to stay in the first class. People who telephone have only the voice at the other end of the wire—and a telephone official, in "How To Use the Telephone," tells how extremely important that voice is, right down to the "Goodbye."

IN THE article on the raised rear vent water closet in this issue will be found some interesting comments by readers, following the announcement of the Bureau of Standards of an agreement that after this year these toilets will not be listed as standard. The article traces the development of local venting, and one contractor, who has been using this type of toilet for 35 years expresses the opinion that if there were more local venting and less back venting "we would have better plumbing installations." Others differ and see no place for this type of toilet. Perhaps you have some thoughts on the subject — or will have, after reading this article.

IN THE next issue, we will launch an improved reader service with a pictorial record of the heating installation in the nearly completed Empire State building, in New York City, at the present time the tallest building in the world. Pictures often tell the story better than words. From the pictures we had taken and which we will use, the average contractor will get some ideas from this big installation that can be applied to his own smaller jobs.

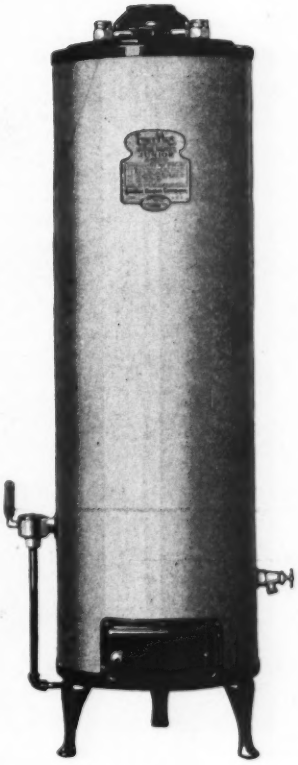
The man who is so busy that he does not have time to read his trade paper is like the man who was so busy chopping wood that he did not have time to sharpen his axe

GIVE 'EM A CHANCE

Be an optimist—there's business to be had if you will only think so.

Give your customers a chance to buy the

EverHot AUTOMATIC WATER HEATER



They are all from Missouri, but you can quickly show them that the EverHot gives them dollar for dollar value and More Joy per Dollar than any other household appliance, for its service extends over every hour of every day and it directly benefits every member of the family.

The EverHot is Quality—it is trouble-free—it renders Perfect Automatic Hot Water Service—with a reasonable cost for operation—what more can you offer to get them to buy?

Give 'em a chance to spend that money they've been hoarding. Talk EverHot day in and day out, and make the balance of 1930 show a real profit and pave the way for a prosperous 1931.

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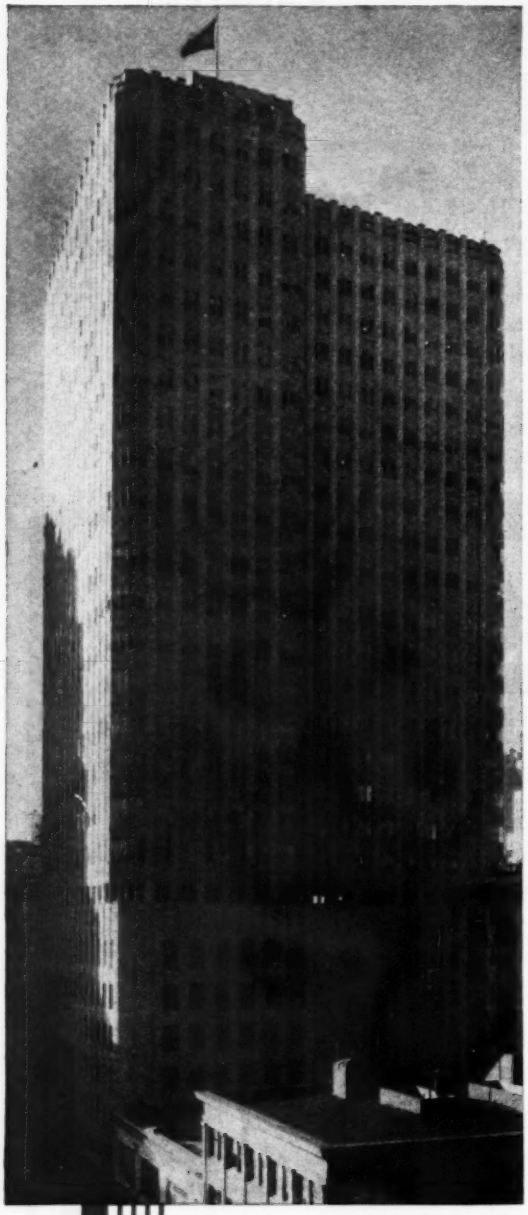

450 Sutter Building, San Francisco, Cal., piped with Youngstown steel pipe in both plumbing and heating systems.

Architect—MILLER & PFLUEGER—San Francisco

Engineer—HUNTER & HUDSON—San Francisco

General Contractor—LINDGREN & SWINERTOWN—San Francisco

Plumbing Contractor—W. J. FORSTER COMPANY—San Francisco

Heating Contractor—FREDERICK W. SNOOK CO.—San Francisco

Piping America's Finest Buildings

•

FROM NEW YORK to San Francisco, from Duluth to New Orleans, Youngstown steel pipe is specified by leading architects for the plumbing and heating systems of America's finest buildings. This nation-wide preference for Youngstown steel pipe is by no means accidental . . . but is the result of its performance in thousands of installations.

Manufactured from the finest grade of steel, to the highest standard of quality, in modern mills, by specialists in steel fabrication, Youngstown pipe offers permanent, trouble-free pipe installation. That is why it is so consistently specified by architects and plumbing and heating contractors from coast to coast, and stocked by leading jobbers everywhere.

The
YOUNGSTOWN SHEET & TUBE CO.

One of the oldest manufacturers of copper-steel, under the well-known and established trade name "Copperoid"

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KANSAS CITY, MO. · Commerce Building
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NEW ORLEANS · Hibernia Bldg.
NEW YORK · 30 Church Street Hudson Terminal Building
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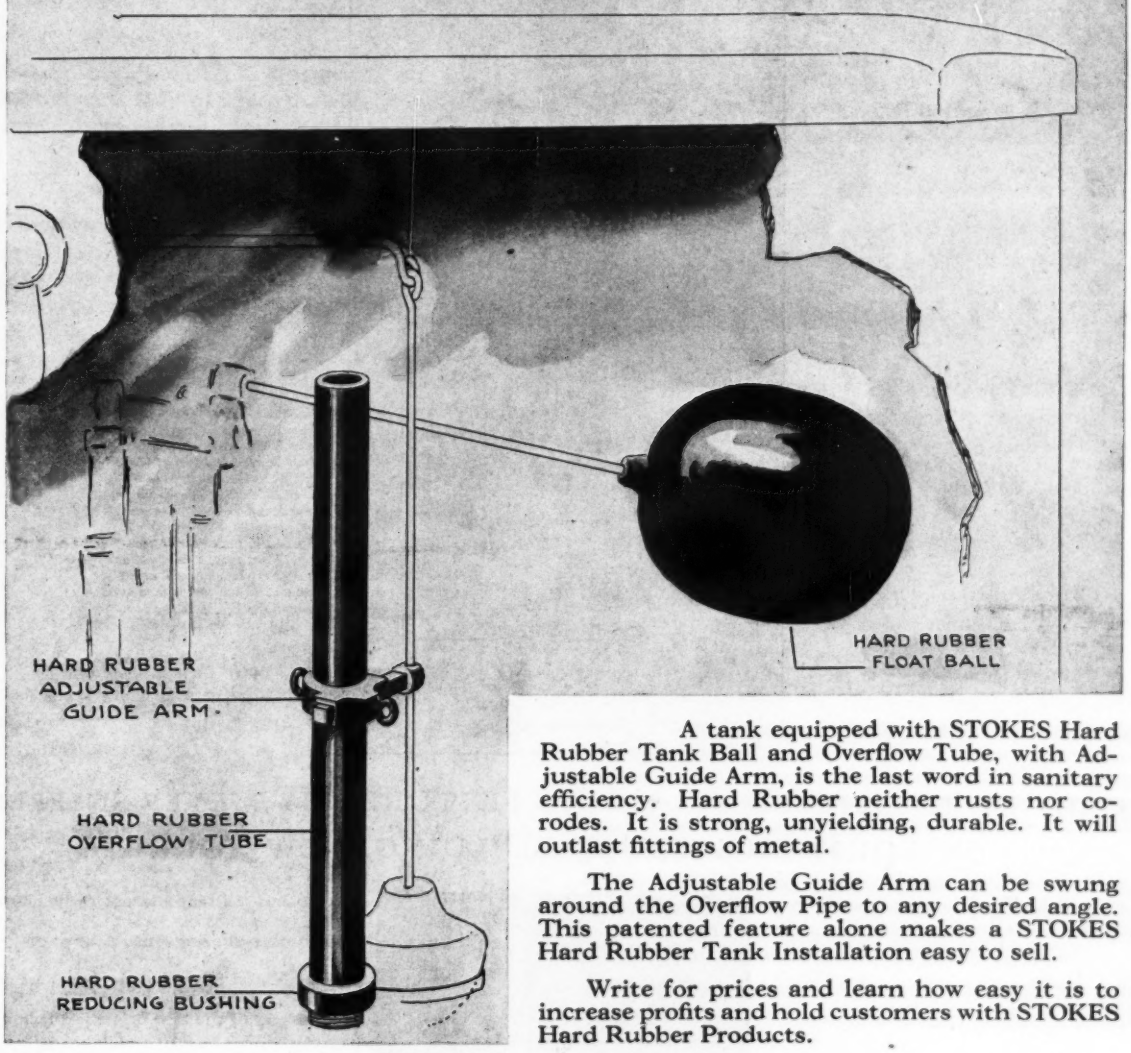
LONDON REPRESENTATIVE · The Youngstown Steel Products Co., Dashwood House, Old Broad St., London, E. C. Eng.

YOUNGSTOWN

GALVANIZED SHEETS PROTECTS · SAVE WITH STEEL

Hard Rubber Fittings by STOKES

FOR THE PLUMBING INDUSTRIES



A tank equipped with STOKES Hard Rubber Tank Ball and Overflow Tube, with Adjustable Guide Arm, is the last word in sanitary efficiency. Hard Rubber neither rusts nor corodes. It is strong, unyielding, durable. It will outlast fittings of metal.

The Adjustable Guide Arm can be swung around the Overflow Pipe to any desired angle. This patented feature alone makes a STOKES Hard Rubber Tank Installation easy to sell.

Write for prices and learn how easy it is to increase profits and hold customers with STOKES Hard Rubber Products.

HARD RUBBER IN EVERY CONCEIVABLE FORM

Moulders Since 1897

Nearly 34 years in the business of moulding hard rubber products has given this company a fund of experience that insures a product as nearly perfect as human care and skill can make it. We welcome a trial order.

Look for the

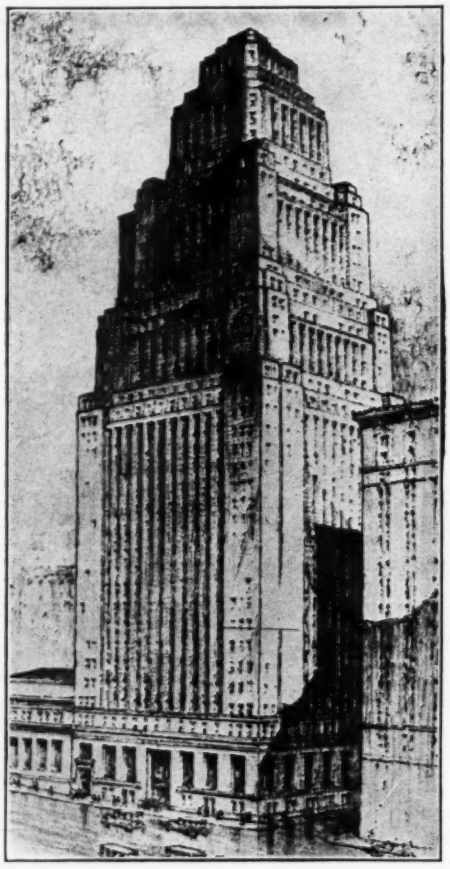
Mark of Quality

Jos. Stokes RUBBER CO.

Trenton N.J.

Canadian Plant, Welland, Ontario

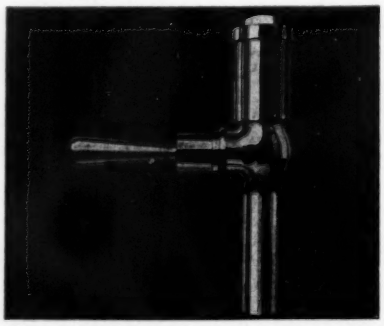
MEETING ARCHITECTURAL STANDARDS OF QUALITY



Equitable Trust Building, 11 Broad Street, New York, Architects: Trowbridge & Livingston, New York; plumbing contractor: W. G. Cornell, Long Island City, N. Y.; Solid Nickel Silver plumbing fixtures manufactured by Meyer-Sniffen, New York. Located in the center of financial New York, this modern building has 42 floors above ground, is 550 feet high and contains 11,992,071 cubic feet.

SOLID NICKEL SILVER PLUMBING FIXTURES BY MEYER-SNIFFEN* IN EQUITABLE TRUST BUILDING, NEW YORK

The Equitable Trust Building, in addition to being one of the largest of modern office buildings, embodies many new features of beauty, comfort and convenience. Throughout this imposing structure Solid Nickel Silver plumbing fixtures have been installed—thereby insuring constant cleanliness and life-long service... Solid Nickel Silver plumbing fixtures are now readily supplied in practically any quantity or style required for all types of quality installations. They are



18% 22 Nickel SILVER

corrosion-resistant and not easily marred or broken during installation or use. Solid Nickel Silver has the hardness and toughness of the best bronze—a factor of great importance in connection with the wear-resistance of valve seats. In its silver-like beauty Solid Nickel Silver resembles Pure Nickel and high Nickel alloys. Architects everywhere are specifying sanitary fixtures made of Solid Nickel Silver for buildings that are designed to serve many generations of discriminating tenants.

** Diamond Metal is the name used by Meyer-Sniffen Co. to identify its Nickel alloy used in manufacturing Nickel Silver plumbing fixtures. This is a solid white metal and contains a high percentage of Nickel.*

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

Mueller **STREAMLINE** Hard Copper Pipe and Fittings Have Many Advantages for A Heating Installation

RADIATES LESS HEAT

A Mueller **STREAMLINE** Copper Pipe and Fitting installation radiates very little heat. In fact, nine times less than other materials commonly used for the purpose and in hot water lines, steam lines, etc., can very often be advantageously used without insulation.

CORRESPONDINGLY SMALLER PIPE SIZES CAN BE USED

The waterway through **STREAMLINE** pipe and fittings is uniform and smoothly recessed, resulting in an uninterrupted flow. This quality, together with freedom from clogging rust and smooth interior of the pipe, cuts flow resistance to a minimum. These features make it practical to reduce the pipe sizes on the plans at least one size throughout.

REQUIRES LESS SPACE

A Mueller **STREAMLINE** installation is not connected by either threading or flaring, consequently no room is required for wrench grip. It may be placed close up to walls, partitions and ceilings.

COSTS LESS

Mueller **STREAMLINE** Hard Copper Pipe and Fittings costs you less than any other non-ferrous material for the purpose. It gives your customer a better job and a permanent one.

HERE IS SOME VALUABLE INFORMATION FOR USE ON YOUR HOT WATER HEATING JOBS

The smooth uninterrupted interior waterway and non-clogging properties of **STREAMLINE** pipe and fittings permit the use of the following sizes of radiator connections for gravity hot water heating:

Copper Pipe Sizes	First Story	Second Story
3/8"	0-25 sq. ft.	0-30 sq. ft.
1/2"	26-60 sq. ft.	31-90 sq. ft.
3/4"	61-100 sq. ft.	91-125 sq. ft.

The size of mains must be equal to or larger in cross section than the area of all the branches; workmanship must be first class and adjustable radiator valves must be used.

Mueller Brass Co.

Port Huron, Mich.

Three Generations of Brass Making

Patent 1,770,852
Patent 1,770,502
Other Patents Pending

Patent 1,770,852
Patent 1,770,502
Other Patents Pending

Patent 1,770,852
Patent 1,770,502
Other Patents Pending

Patent 1,770,852
Patent 1,770,502
Other Patents Pending

Patent 1,770,852
Patent 1,770,502
Other Patents Pending

DURO

Announces—

A NEW LOW PRICED, HIGH QUALITY, SINGLE VALVE, GALVANIZED . . .

WATER SOFTENER

$85 List Price

f. o. b. Dayton—subject to your regular trade discount

LOW PRICE — HIGH QUALITY — REAL PROFIT

Operation—Single control positive type flat disc valve simplifies regeneration.

Capacity—10,000 grain gallons; or 500 gallons between regenerations on 20-grain water.

Salt Storage—100 pounds—enough for several months.

High Flow Rate—8 gallons per minute.

Large Fittings—Three-quarter inch.

Legs—To elevate softener off the floor.

Specifications—Armco iron construction—hot dip galvanized both inside and outside. Finish, Duro grey with black and bronze trim. Depth 14 inches, width 24 inches, height 54 inches. Also furnished in larger size.

High Quality—Simple Operation—Large Capacity—Low Net Cost

THE DURO COMPANY . . . DAYTON, OHIO

Write for Catalog.— Water Softeners, Water Systems, Filters, Cellar Drainers, Motors . . . Sales Offices in Principal Cities.

THE CELEBRATED SKIP TOOTH DIE
(Genuine Nye)
REG. U. S. PAT. OFFICE

A Letter from Harry G. Nye

December 27, 1930.

To the Plumbers and Steamfitters of the U. S. A.

A TIP ON THE MARKET

Friends:

Strange to say, now that the elevator boys are out of it, the stock market seems to be going up. That is, it was yesterday. The stock market in New York is like the weather in Utica: you can't tell by what it did yesterday what it is going to do today. A lot of friends of mine thought they could, but they were poor prophets. Hence the poor profits. I never attempt to predict the course of the stock market. However, I'll take a chance and say this, that I believe it will do one of three things: go down, go up, or stay about where it is.

But I believe the worst is over. I don't believe we will have another slump like the slump of October and November, 1929, until we have another slump like it. But everything looks very promising now, especially for the brokers. No matter what happens, the broker gets his. The customer also gets his, but in a different place. The broker gets his commission coming and going, and his interest standing still. But I'll say this for the broker: he will stand by you as long as you've got a dollar, if he thinks the dollar is good.

There is no question that some stocks are too cheap and some are too dear. The thing to do is to sell the ones that are too dear and buy the ones that are too cheap. We hesitate to make any specific recommendations. However, steels seem to be harder than lead or lard. Coppers are hard to find, especially if a fight starts. The holding companies look all right: if anything happens you will still have the bag. Chain stores look good; but then so does the stuff you buy in them. A lot of stocks ought to do better; they certainly ought.

Patents Pending

THE LIGHTWEIGHT CHAMPION

Threads—Cuts off and Reams

Capacity ⅛ to 2 Inches

Furnished with either A. C. Motor Universal Motor or Gasoline Engine

But we are willing to give you a tip on one giltedge investment that we know will be perfectly safe and will pay you a nice profit before the year is over. This is confidential. Buy Nye Tools. They work so much easier and faster than any others, and last so much longer, that they can't go wrong. This is better than spending your money on chorus girls; they sometimes do.

Sincerely yours,

Harry G. Nye

OTHERWISE KNOWN AS

THE NYE TOOL & MACHINE WORKS

4120-30 Fullerton Avenue :: Chicago

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THE CELEBRATED SKIP TOOTH DIE
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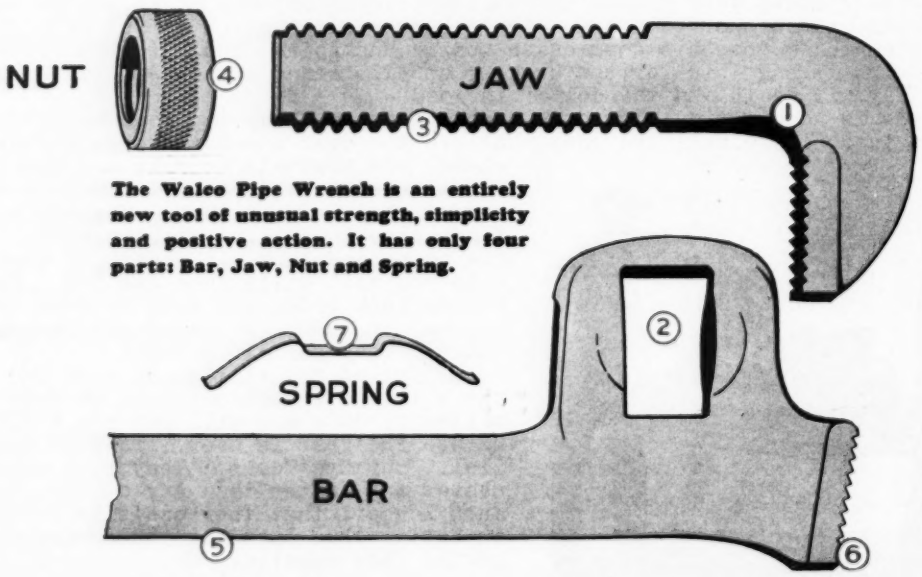
WALCO

The New Pipe Wrench

MADE BY WALWORTH (PATENTED)

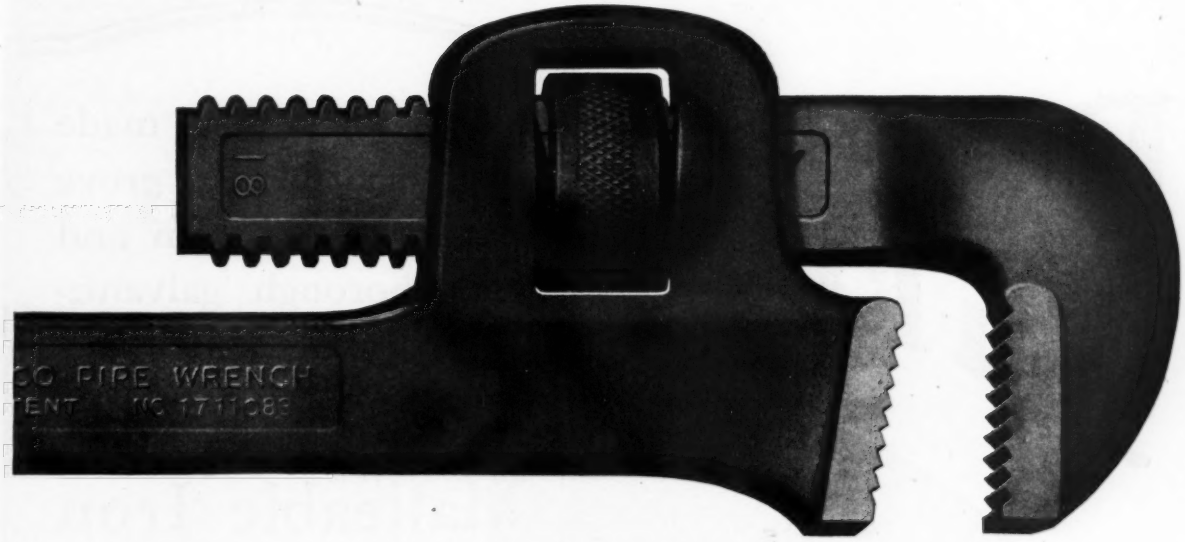


The Walco Pipe Wrench is an entirely new tool of unusual strength, simplicity and positive action. It has only four parts: Bar, Jaw, Nut and Spring.

WALWORTH

Walworth Company, General Sales Offices: 60 East 42nd St., New York
Plants at Boston, Mass.; Kewanee, Ill.; Greensburg, Pa.; and Attalla, Ala.
Walworth Company Limited, 660 St. Catherine Street West, Montreal, P. Q.
Walworth International Co., 11 Broadway, New York, Foreign Representative
. . . Distributors in Principal Cities of the World . . .

All parts accurately heat treated for



A HUSKY WRENCH FOR HUSKY MEN

1 **JAW—Drop-forged high grade tool steel; scientifically designed to provide maximum strength by proper distribution of metal.**

2 **JAW HOUSING—One piece with bar, drop-forged from high grade tool steel; protects nut against damage and loss of adjustment.**

3 **JAW THREADS—Notice the rounded crests of the threads, designed to resist damage in use and to avoid jamming inside the nut.**

4 **NUT—The new design of the nut provides a raised surface on each side of the knurl to protect it from battering.**

5 **BAR—Drop-forged from high grade tool steel, with metal distributed to provide maximum strength, comfortable handgrip.**

6 **TEETH—New design to insure quick, certain grip. Scientific heat treatment imparts correct combination of hardness and strength.**

7 **SPRING—Entirely new alloy steel spring provides double action on jaw. Easily replaced without tools.**

greatest possible endurance and strength

Do you know-

Microscopic Tests made on stock fittings prove the heavy uniform and and thorough galvanizing of

KENNEDY Malleable Iron FITTINGS

Microphotograph of galvanizing in Kennedy Fitting. Note uniformly heavy coat.

This is No. 8 of a series explaining why Kennedy Malleable Iron Fittings protect you and your customers

Note these other good reasons for using Kennedy Fittings

- Made in a 15-acre plant devoted exclusively to their manufacture.
- Furnished in over 1000 different types and sizes.
- Metal carefully selected and tested to assure 45,000 lb. per sq. in.
- Annealed for over 200 hours to assure true malleability.
- Precision-machined to assure alignment to 0.010-in. limits.
- Extra wide chamfer and clean sharp threads to help speed up pipe-fitting.
- Size marked on all fittings for convenience.
- Large stocks maintained in warehouses located at principal industrial centers.
- Readily obtainable from jobbers everywhere.
- Always sold at standard market prices.

THE KENNEDY VALVE MFG. CO., ELMIRA, N.Y.

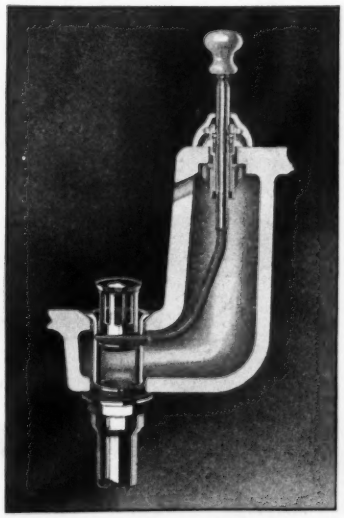
Warehouses and sales offices in principal cities

KENNEDY

VALVES-PIPE FITTINGS-FIRE HYDRANTS

1855 • SEVENTY-FIFTH ANNIVERSARY • 1930

Little things make big sales . . .



Anybody who has spent a peevish hour trying to get a lavatory drain to work that has got clogged after mother washed her hair will appreciate Point No. 1 of superiority in the Crane *Securo* Quick-Draining Direct-Lift Waste. The *Strainer Plug* catches all foreign matter, at the outlet of the basin, keeping the trap free. There are eight other advantages as marked:

2 ***Direct Lift.*** The natural way to operate a waste. A pull on the china knob opens it; a push closes it.

3 ***Construction.*** Simple; only one moving part. No stuffing box, ball joints, or toggles to leak or get out of order.

4 ***Large Outlet.*** Extra large unobstructed outlet.

5 ***Quick Drain.*** Drains basin in 6 seconds, the rush of water cleansing basin each time.

6 ***Cleaning.*** Strainer plug easily removed for cleaning.

7 ***Positive Action.*** Strainer plug positively closed by handle, assuring water-tight joints.

8 ***Security.*** Ball catch on operating stem positively holds outlet strainer in open position.

9 ***Appearance.*** Operation through overflow exposes less metal parts to be kept clean and permits trap to be placed higher, adding to appearance of lavatory.

It is tireless attention to smallest details that gives Crane materials their ready saleability and unsurpassed reputation. You will find this painstaking care running through every feature in the complete Crane line of plumbing and heating materials. This is Point No. 1 in the score of ways through which Crane co-operation helps the contractor.

Valves CRANE *Fittings*

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO

NEW YORK OFFICES: 23 WEST 44TH STREET

Branches and Sales Offices in One Hundred and Ninety-six Cities

Where Unusual Care Governs Selection —

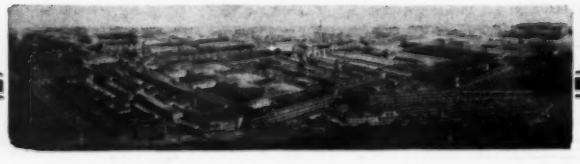
Haas Universal Flush Valves Are Chosen . . .

This is the Haas Universal Flush Valve, 1200 Series—a product of over thirty years' manufacturing and service experience. Note the few simple parts—the rugged neatness—the quality ***look.***

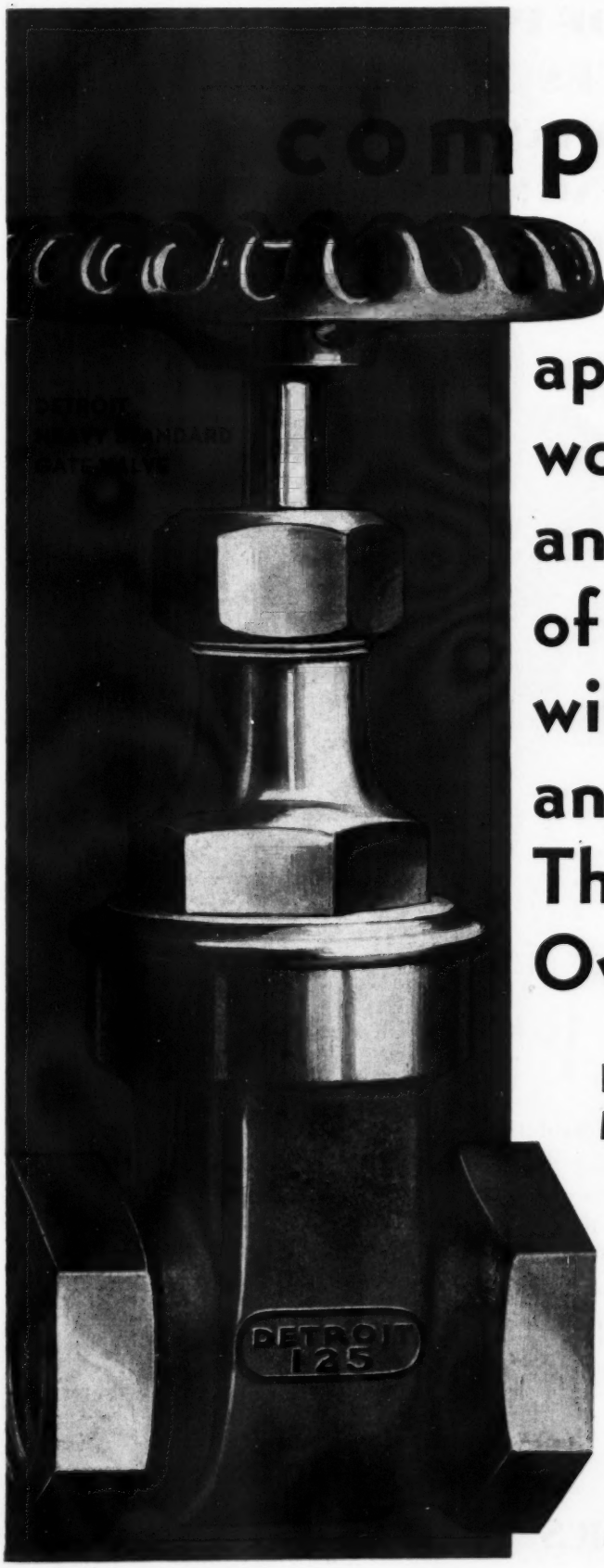
Our ***new*** *Sectional Catalog "C" is ready. Send for your* ***free*** *copy at once.*

WHERE towering office buildings arise . . . wherever the spires of schools reach skyward . . . wherever the stacks of industry unfurl their smoky banners—there you will find Haas Universal Flush Valves. Any place where two or more toilet units require a flushing mechanism of sturdy quality, Haas has something unusual to offer. From modern Toledo to old Monterrey, Haas Flush Valves have been outliving their *five year guarantee* threefold. Here are a few of the factories, schools and other public buildings equipped with Haas Universal Flush Valves. Here time and rigid service have made their tests. Here Haas Flush Valves have proved their merits . . . Let us or your jobber tell you more. Literature upon request.

THE PHILIP HAAS COMPANY
Dayton, Ohio, U. S. A.



Haas



Compare

the appearance workmanship and price of this valve with that of any other . . . Then Use Your Own Judgment

DETROIT BRASS & MALLEABLE WORKS
DETROIT, MICH.

DETROIT
VALVES

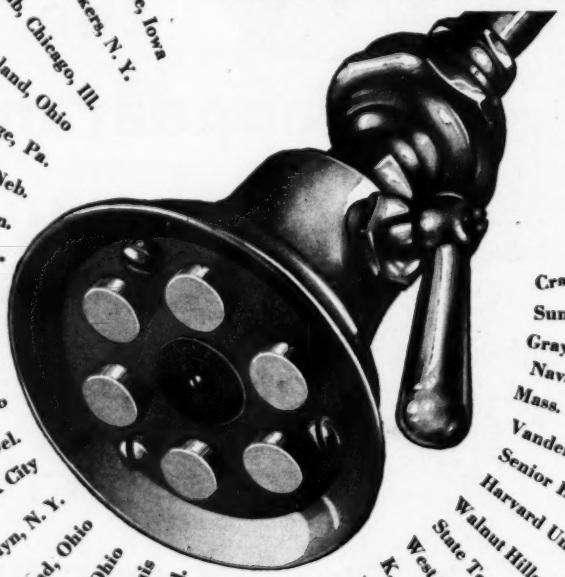
Manufacturers also of a full line of
"Detroit" Malleable and Drainage Fittings

Distributed only through Wholesalers

New York Warehouse
4306 36th St., Long Island City, N.Y.

LOOK AT THIS LIST OF PRIVATE, PUBLIC AND SEMI-PUBLIC PLACES WHERE SPEAKMAN ANYSTREAM SELF-CLEANING SHOWER HEADS HAVE BEEN INSTALLED . . . .

Y. M. C. A., Dubuque, Iowa
Municipal Baths, Yonkers, N. Y.
Beverly Country Club, Chicago, Ill.
Hollenden Hotel, Cleveland, Ohio
Penn State College, State College, Pa.
Senior High School, Norfolk, Neb.
Y. M. C. A., Nashville, Tenn.
Y. W. C. A., Cortland, N. Y.
Onesta Hotel, Canton, Ohio
Hamilton Club, Chicago, Ill.
Y. M. C. A., Springfield, Ill.
Y. W. C. A., Akron, Ohio
Y. M. C. A., Wilmington, Del.
Chrysler Bldg., New York City
Ebbetts Field, Brooklyn, N. Y.
Hotel Cleveland, Cleveland, Ohio
North High School, Akron, Ohio
Missouri Athletic Assn., St. Louis
Catholic College, Mundeline, Ill.
University of Illinois, Urbana, Ill.
Gibson Hotel, Cincinnati, Ohio
Decatur Club Bldg., Decatur, Ill.
Severin Hotel, Indianapolis, Ind.
Mayflower Hotel, Washington, D. C.
Men's Field House, Morgantown, W. Va.
K. of C. Club House, Brooklyn, N. Y.
West Chester Biltmore Country Club, Rye, N. Y.
State Teachers College, Hillwood Lakes, N. J.
Walnut Hills High School, Cincinnati, Ohio
Harvard University, Cambridge, Mass.
Senior High School, Philadelphia, Pa.
Vanderbilt Athletic Assn., Nashville, Tenn.
Mass. Institute Technology, Boston, Mass.
Naval Training Station, Detroit, Mich.
Graystone Park Apt., Morristown, N. J.
Sunset Ridge Country Club, Winnetka
Cranbrook Gymnasium, Detroit, Mich.



Some of these installations called for from 100 to 500 heads—one for more than 700 heads! And the plumber's average profit is $4 per head!

ALL FROM THE SAME HEAD

Flood Shower

Normal Shower

Needle Shower

GO to Country and Athletic Clubs, Y. M. C. A.'s, colleges, schools, and hotels in your own city. Suggest the installation of these new Anystream Self-Cleaning Heads. It's a good idea to leave a head for trial . . . You should have a few heads just for this purpose. Order them now from your jobber.

There's a lot of profit to be made pushing these heads, and make sure you sell one with every new shower. The number is K-3395.

We'll supply folders, blotters, stickers and other sales helps, imprinted with your name and address.

SPEAKMAN COMPANY
Wilmington, Delaware

SPEAKMAN
SHOWERS *and* FIXTURES

HOT WATER HAPPINESS

at a price that stirs up sales

JUST about this time of the year a lot of men—and women, too—of calm, unruffled dispositions begin to fret, and fume, and frown about all the extra bother they have to go to in getting hot water.

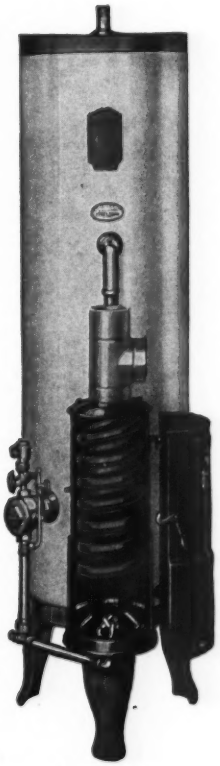
The delightful up-to-the-minute convenience of the automatic storage heater — while they're in this mood — looks mighty good to them.

But, of course, they've always heard that these automatic storage heaters run into money, so they decide to wait a while.

Someone in your community — now get this! — is going to surprise these potential customers when he tells them how little it costs to own a Hotstream. And he's going to make some sales that run into good profits. Then — his customers are going to help him sell *more* Hotstreams!

Would you like to be this man? Write TODAY for the Hotstream details.

THE HOTSTREAM HEATER CO.
"Makers of Heaters that Heat"
CLEVELAND, OHIO



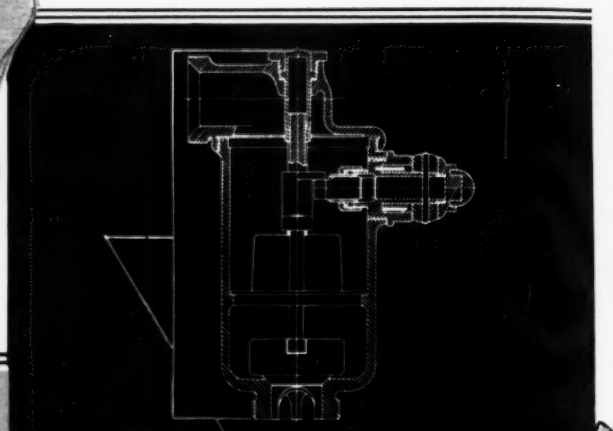
No. 20 SA
List Price, $66
Complete

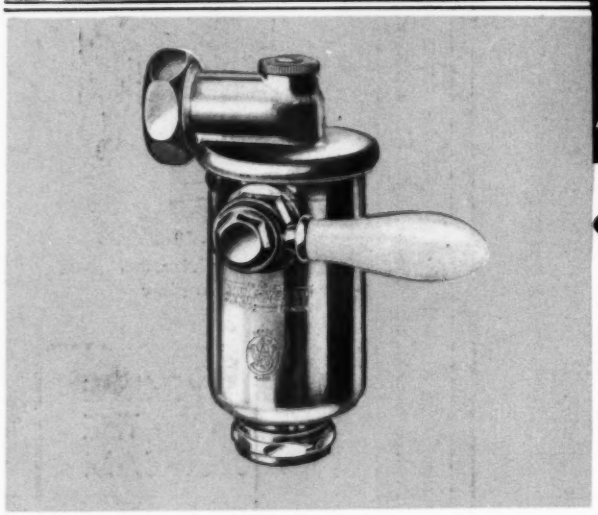
EVERYTHING FAVORS THE HOTSTREAM

Times, Conditions, Features and Price make the Hotstream Heater the best bet for Heater sales this Winter. And the Triple Guarantee (engineered-in) builds good will that brings many other sales.

HOTSTREAM
AUTOMATIC STORAGE
HEATERS

....Economical?





...Without doubt!

Shrewd buyers know it

BECAUSE

Its all metal construction makes it Permanent.

It is self-cleaning and requires no attention.

Its measured flush prevents a waste of water.

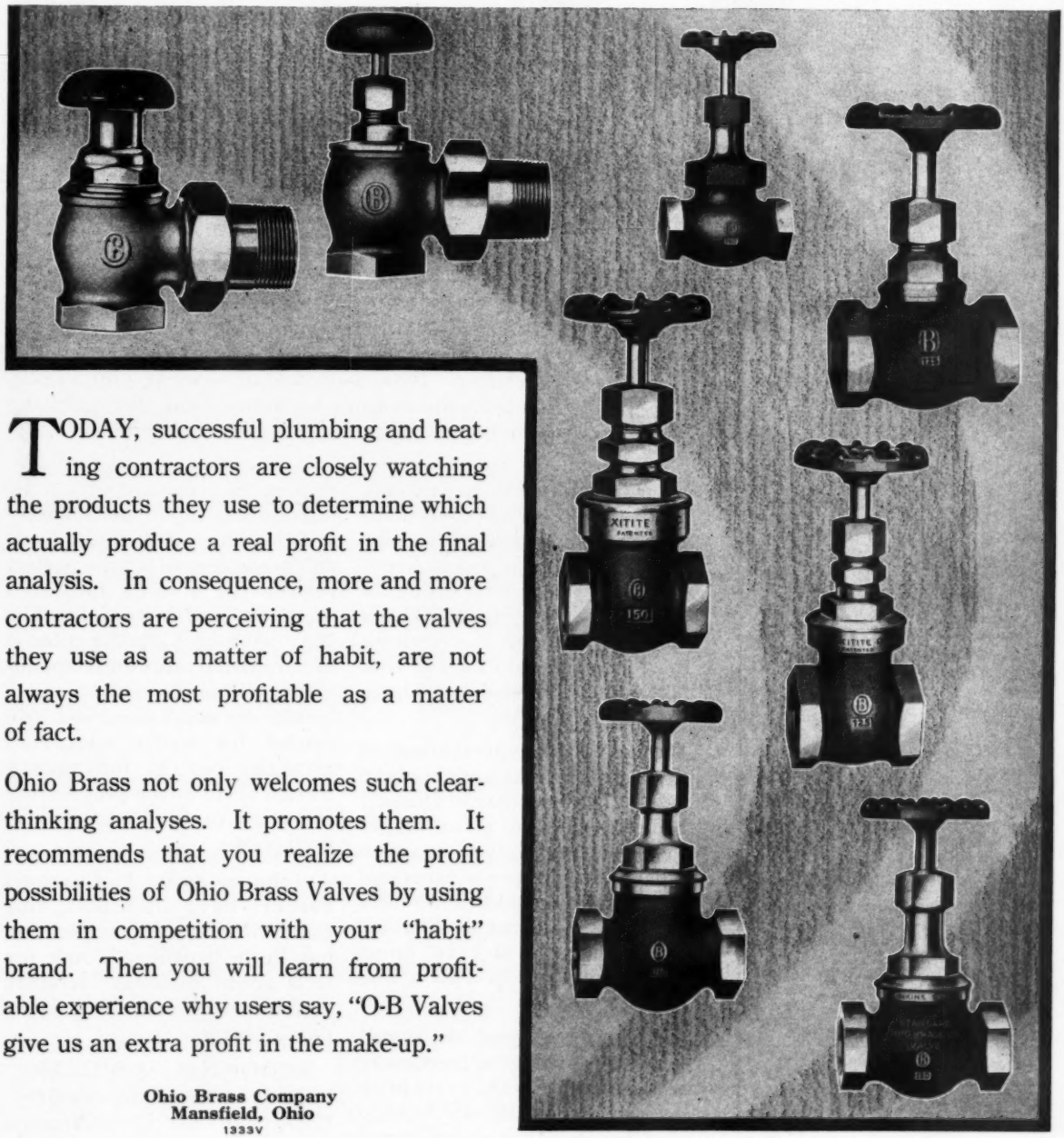
Its ease of adjustment saves time and makes it fit the job.

Shrewd buyers—both Plumbing Contractors and Consumers, take advantage of these features.

SMITH & WESSON
FLUSH VALVE DIVISION
SPRINGFIELD MASS.

SMITH AND WESSON FLUSH VALVES

The "Extra Profit" Valve Line



TODAY, successful plumbing and heating contractors are closely watching the products they use to determine which actually produce a real profit in the final analysis. In consequence, more and more contractors are perceiving that the valves they use as a matter of habit, are not always the most profitable as a matter of fact.

Ohio Brass not only welcomes such clear-thinking analyses. It promotes them. It recommends that you realize the profit possibilities of Ohio Brass Valves by using them in competition with your "habit" brand. Then you will learn from profitable experience why users say, "O-B Valves give us an extra profit in the make-up."

Ohio Brass Company
Mansfield, Ohio
1333V

Ohio Brass Co.

NEW YORK PITTSBURGH
PHILADELPHIA CHICAGO

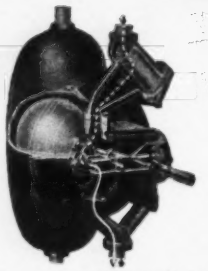
ATLANTA BOSTON CLEVELAND ST. LOUIS
WM. P. HORN CO: LOS ANGELES SAN FRANCISCO SEATTLE

PORCELAIN INSULATORS
LINE MATERIALS
RAIL BONDS
CAR EQUIPMENT
MINING MATERIALS
VALVES

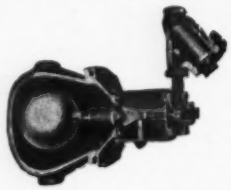
"Jim"

...why not give him some steady work and yourself some extra profits?

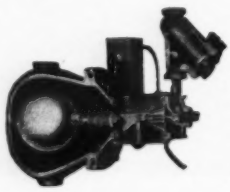
"I'm pushing boiler feeders more than ever," said a contractor. "Now that contract work is a little slack, it enables me to hang on to my good men and keep them happy. There's 'old Jim,' for instance . . ."



The No. 28 McDonnell Self-Cleaning Duplex Feeder for moderate and large sized installations. The Rolls-Royce of boiler feeders.



The McDonnell No. 30 Safety Feeder—the ideal feeder for moderate and smaller jobs—particularly for automatic jobs.



And now the greatest combination yet for oil-fired or stoker fired jobs—the No. 31 Emergency Switch used in combination with the No. 30 Safety Feeder. Ask for bulletin describing this new development.

Your own business may or may not be slack just now, but there *will* be times when feeder jobs can mean a lot to you in keeping "Jim" busy and filling in the gaps in the profits. That's why you can't afford to overlook the big easily sold market that McDonnell Boiler Feeders have opened up for you.

Whatever the general trend of the heating industry may be, there is every evidence that McDonnell Boiler feeders are going bigger than ever. Right now—at a time when some manufacturers are pessimistic—our sales are fifty-four per cent greater than last year. Isn't it merely good business to tie up with a line that is moving?

Consider the scope of McDonnell Feeders—a feeder to meet every service condition and every price demand. The No. 28 Self-Cleaning Duplex Feeder revolutionized duplex feeder construction by introducing big capacity, rotary self-cleaning valves and adjustable water levels. It's the perfect feeder for a wide range of moderate and large jobs. The No. 30 Safety Feeder placed McDonnell quality and dependability within the range of every home owner—doubled the market for feeder sales. And now the No. 31 Emergency Switch gives you a plus feature for many oil-fired and stoker-fired jobs.

As the sales of McDonnell Feeders have increased, our policy of contractor cooperation has been broadened. Ask for facts about sales-aid literature and bulletins describing latest developments.

McDONNELL & MILLER,
400 N. Michigan Ave., Chicago
Eastern Office: Grand Central Terminal, New York. N. Y.

McDONNELL & MILLER
Boiler Feeders
"Doing one thing well"

KOHLER PLUMBING FIXTURES AND FITTINGS THROUGHOUT

LEFT TO RIGHT

CASA LOMA APARTMENT HOTEL, 103 W. Ward Parkway, Kansas City, Mo. *Architect*, W. A. Besecke. *Builder*, McCanles Bldg. Co. *Owner*, Pickering Lumber Co. *Jobber*, Kellogg-Mackay Co. *Plumber*, W. Lutz.

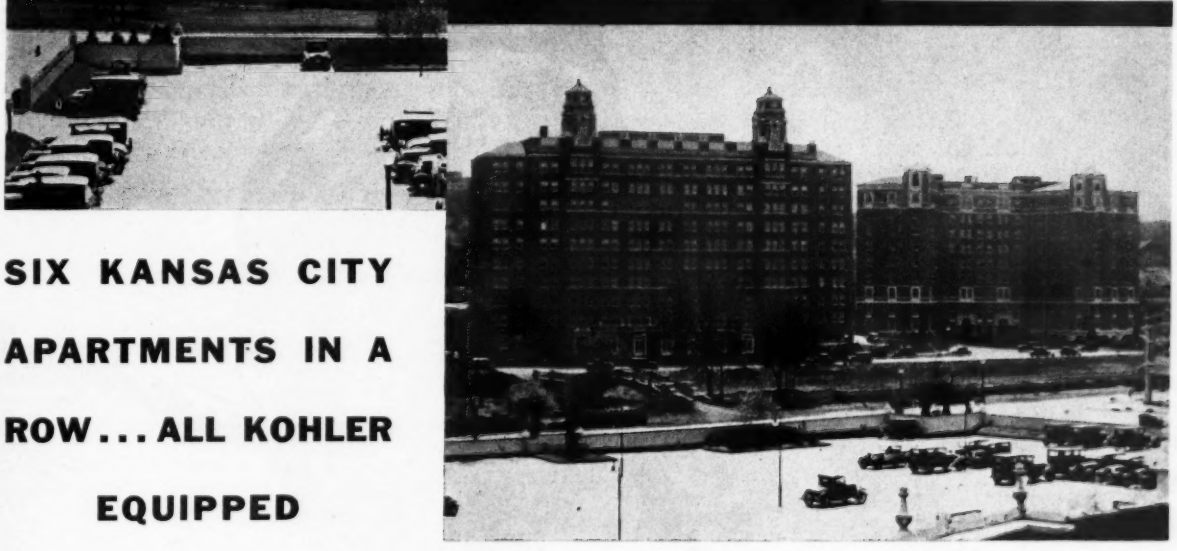
CASA LOMA W. APARTMENT HOTEL. *Architect*, W. A. Besecke. *Builder*, McCanles Building Co. *Owner*, McCanles Building Co. *Jobber*, A. Y. McDonald Mfg. Co. *Plumber*, Laitner P. & H. Co.

BIARRITZ APARTMENT HOTEL. *Architect*, W. A. Besecke. *Builder*, McCanles Building Co. *Owner*, McCanles Building Co. *Jobber*, A. Y. McDonald Mfg. Co. *Plumber*, Laitner Plumbing & Heating Co.

VILLA RIVIERA APARTMENT HOTEL. *Architect*, A. H. Gentry. *Builder*, McCanles Building Co. *Owner*, McCanles Building Co. *Jobber*, A. Y. McDonald Mfg. Co. *Plumber*, Laitner P. & H. Co.

VILLA LOCARNO APARTMENT HOTEL. *Architect*, A. H. Gentry. *Builder*, McCanles Building Co. *Owner*, Locarno Investment Co. *Jobber*, Kellogg-Mackay Company. *Plumber*, Laitner P. & H. Co.

VILLA SERENA APARTMENT HOTEL. *Architect*, A. H. Gentry. *Builder*, McCanles Building Co. *Owner*, Pickering Lumber Company. *Jobber*, A. Y. McDonald Mfg. Co. *Plumber*, Laitner P. & H. Co.



SIX KANSAS CITY APARTMENTS IN A ROW... ALL KOHLER EQUIPPED

BUILDERS state that all-Kohler installations make good salesmen. The McCanles Building Company, Kansas City, reasoned thus and in one whole city block of apartments installed Kohler products throughout.

Six apartment hotels were built, all beautifully appointed, embodying all advantages of informed and intelligent building practice. Into them went over 4000 Kohler fixtures and fittings — exquisitely designed, and, therefore, gratifying to the most critical tenant; efficient and permanent, which means freedom from expense or worry for the owner.

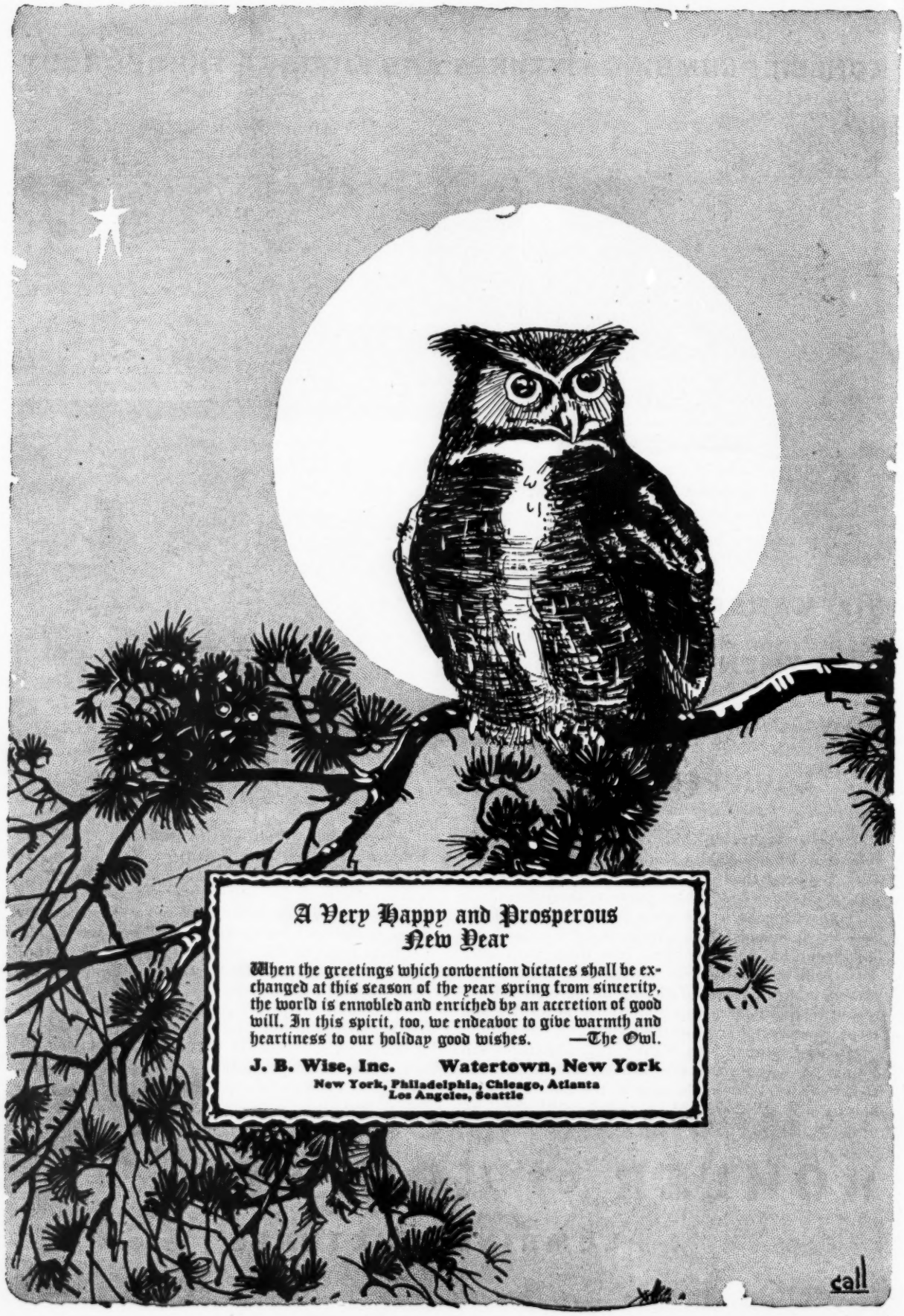
Home hunters reason, rightly, that if fixtures and fittings are efficient, safe, fine through and through, the same care prevails in the rest of the house. Which helps you to sell more and finer equipped bathrooms.

Another important point to remember: Kohler of Kohler handles all jobs, no matter how big, with perfect satisfaction to all concerned. Because Kohler of Kohler resources are unusually great, and Kohler of Kohler organization centralized, your customers get every fixture and fitting when specified. And Kohler products come to the job all in one lot—saving considerable expense and labor. On every Kohler job—from bungalow to the largest hotel in New York City—service and co-operation extend from the time the order is placed to the actual installation.

Kohler Co. *Founded* 1873. Kohler, Wis.—*Shipping Point*, Sheboygan, Wis.—*Branches in principal cities*. . . . Look for the Kohler trade-mark on every fixture and fitting.

KOHLER OF KOHLER

PLUMBING FIXTURES


A Very Happy and Prosperous
New Year
When the greetings which convention dictates shall be exchanged at this season of the year spring from sincerity, the world is ennobled and enriched by an accretion of good will. In this spirit, too, we endeavor to give warmth and heartiness to our holiday good wishes. —The Owl.
J. B. Wise, Inc. Watertown, New York
New York, Philadelphia, Chicago, Atlanta
Los Angeles, Seattle
call

Specify MULTICELL UNIT HEATERS

For Guaranteed, Uninterrupted, Inexpensive Heating

UNDER the most severe conditions, Multicell Unit Heaters are delivering effective heat, quickly, when and where it is required. The Multicell Surface is 100% prime heating surface assuring maximum heat transfer per unit of area and per unit of weight.

Every installation is covered by the Multicell Guarantee against leaks and failures due to piping strains.

Even if one of the sections is accidentally damaged, interruption need be only momentary, since the damaged section can be removed by plugging the flow and return header openings and the heater continued in operation until replacement is made.

Once you install Multicell it stays installed and stays in service.

Multicell Unit Heaters are built in 3 sizes . . . each one easy and convenient to install for economical, uninterrupted heating in Factories, Warehouses, Garages, Railroad Shops, Mills, Airport Hangars, Churches, Auditoriums, etc.

Demand Code Ratings

Multicell Unit Heaters are tested and rated in accordance with the standard code for testing and rating steam Unit Heaters, adopted January, 1930, by Industrial Unit Heater Association and the American Society of Heating and Ventilating Engineers.

Write for complete descriptive and engineering data on Multicell, the Guaranteed Unit Heater with 100% prime Heating Surface.

MULTICELL
RADIATOR CORPORATION
LOCKPORT, N. Y.

MULTICELL RADIATOR CORP.
Lockport, N. Y.

Please send complete information and "The Story That Only Multicell Can Tell."

Name _____

Address _____

Too busy

— to get that newspaper ad ready
— to prepare that circular
— to write that sales letter
— to jar those over-due accounts
— to think about window displays
— to write publicity items

?

of course you are!

and that's why we carry two pages of such material in every issue

All you have to do, if you take the Retail Advertising Service, is hand the cuts we send you, and the reprinted pages we send you, to your newspaper or your printer—and your work is done.

These pages carry copy for single- and double-column newspaper ads, for educational leaflets or blotters, for statement enclosures on over-due accounts. They carry directions for making up simple window displays (using only part of the window) with copy for window cards. They carry publicity items on plumbing and on heating, and copy for sales letters. They give you copy for circulars.

The only cost to you is $4.20 for twelve cuts—sent you in pairs every other week. We have studied to give you a service which would reduce your work with advertising to the absolute minimum.

If you want this convenient service just lay your ruler along the line below and tear off the coupon. Pin it to your letterhead and mail it. We'll do the rest.

Retail Advertising Service

DOMESTIC ENGINEERING

1900 Prairie Ave. CHICAGO

Portable Electric Tools

Speed Up the Job!

Use Them to Save Time and Labor

The World-Famous ½-Inch Electric Drill

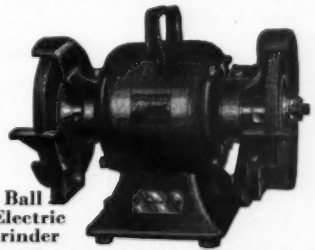
Designed and built for hard, constant use, the Black & Decker ½-Inch Portable Electric Drill has long been the most widely used electric drill in the world.

Readily portable, weighing only 12½ pounds, yet so powerful that a man cannot stall it—even when drilling in steel at its maximum capacity. Universal Motor. Other drills in sizes from ¼-inch to 1½-inch, with hole saws and other accessories available to extend their usefulness.

Portable Electric Saws do the Work of Six Men

These safe, easily-handled saws will rip six times as fast as hand sawing and crosscut seven times as fast. Ideal for all types of building work, large construction jobs, repair work, etc.

Table adjustable from 0° to 45° for bevel cutting and other special sawing operations. With proper blade will also cut light metal, slate, marble, asbestos, tile, transite and porcelain. Universal Motor. Built in 6-inch, 8-inch and 10-inch sizes, packed in convenient carrying cases.



6-Inch Ball Bearing Electric Bench Grinder

A powerful, sturdy grinder, perfectly suited to general grinding, buffing and tool sharpening. Finely balanced construction and special rubber feet eliminate vibration and reduce wheel wear. Conveniently portable. Complete with coarse and fine grinding wheels, tool rests, cable, attachment plug and electric switch, $35.00. 7" and 10" Grinders also available.

The BLACK & DECKER 1⅛-INCH ELECTRIC HAMMER Quickly Pays for Itself!

IT STRIKES 2900 hard blows per minute continuously . . . and a man can strike only about 50 . . . think of the difference!

That's why this amazingly efficient electric hammer is indispensable for any "hammer-action" job such as driving star drills, steel chisels and wood-working chisels. Drills 1-inch holes in concrete at rate of 3 inches per minute—in brick, 8 inches per minute! Ideal for heavy mortising, bushing, caulking, demolition work, corner chiseling, etc.

Fitted with powerful Universal Motor, operating on A. C. or D. C. and Self-Cooling Barrel. Packed in Fibre Carrying Case. Available in ⅝-inch, 1⅛-inch and 1½-inch capacity sizes.

See them at your Distributor's today.

BLACK & DECKER

TOWSON, MARYLAND, U. S. A.

Slough, Bucks., England — **Toronto, Ontario, Canada** — **Sydney, Australia**

Mail This Coupon for Catalogue

The BLACK & DECKER MFG. CO.
TOWSON, MARYLAND, U. S. A.

Please send me catalogue showing full line of Electric Tools. I am particularly interested in:

Electric Hammers — Electric Drills
Electric Saws — Electric Screwdrivers

Name.....

Address.....

Distributor's Name.....

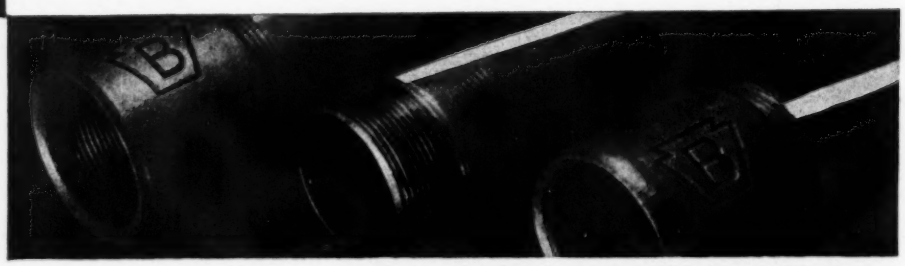
THE MODERN PLUMBING AND HEATING CONTRACTOR KNOWS

"PIPE PRESCRIPTION"

Experienced plumbers know that one type of pipe does not solve all pipe problems. The result of this knowledge is that "pipe prescription" is their established policy. Satisfactory use by plumbing and heating men for over 60 years is responsible for the established fact that there is a definite and important place for Byers Genuine Wrought-Iron pipe, in most "pipe prescriptions." In the places where actual service has established the superiority of wrought-iron, Byers Pipe is recognized as a standard of wrought-iron quality. If you would like to supplement your experience, our engineering counsel is at your disposal. Write to A. M. Byers Company, Pittsburgh, Pa. Established 1864.

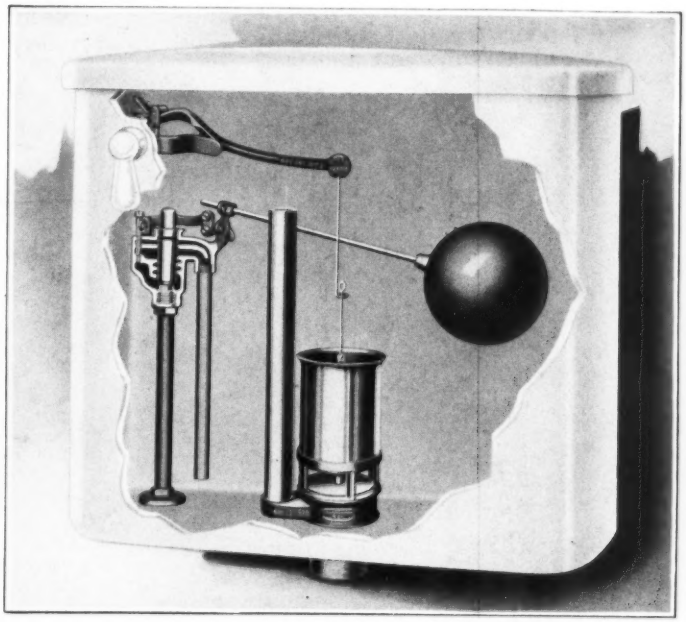
BYERS • GENUINE • WROUGHT-IRON PIPE

AN INVESTMENT • NOT AN OUTLAY



QUIET and ENDURING

MR. PLUMBER . . .



WHAT MORE CAN YOU ASK

In all Curtin valves and ballcocks there are six points of undeniable, superior construction:

1. Long Lived
2. Economical
3. Silence of Operation
4. Cast Bronze and Copper Construction
5. Seats and Plungers Chromium Plated
6. Regulated for high or low water pressure.

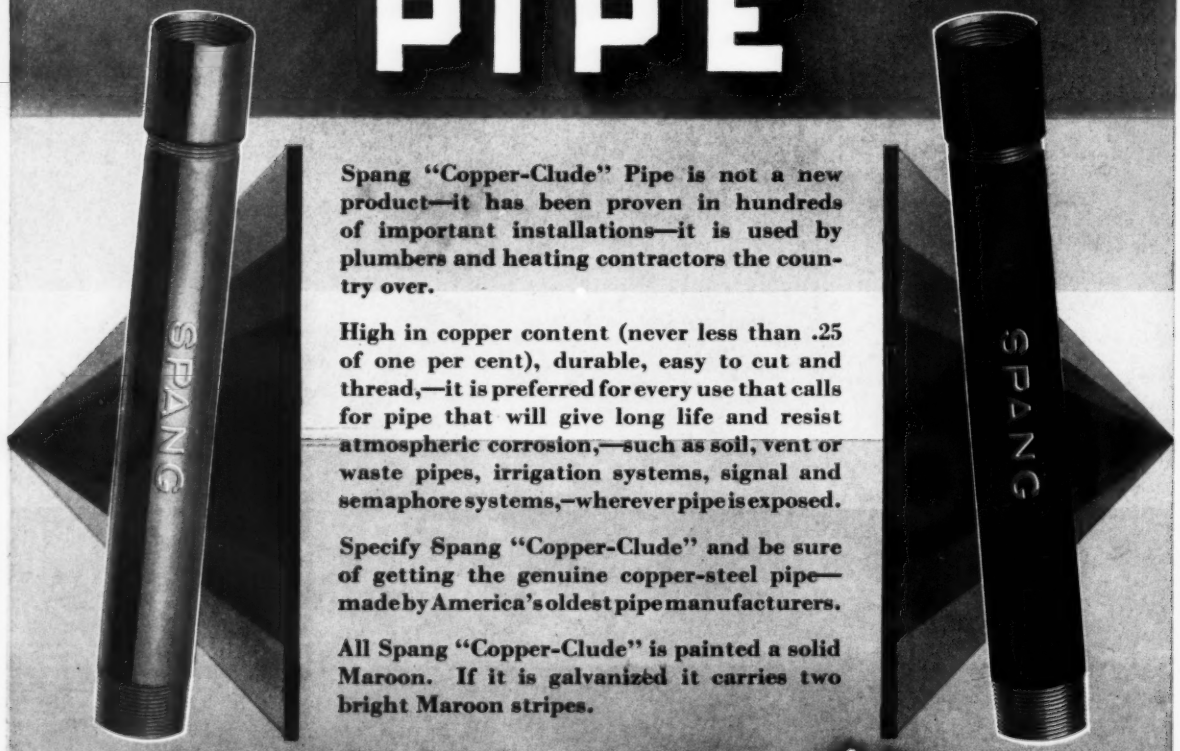
What more can you ask, Mr. Plumber?

A. F. CURTIN VALVE COMPANY
Medford Massachusetts

CURTIN
TANK NOISELESS FITTINGS

SPANG
WELDED STEEL PIPE

SPANG PIPE



Spang "Copper-Clude" Pipe is not a new product—it has been proven in hundreds of important installations—it is used by plumbers and heating contractors the country over.

High in copper content (never less than .25 of one per cent), durable, easy to cut and thread,—it is preferred for every use that calls for pipe that will give long life and resist atmospheric corrosion,—such as soil, vent or waste pipes, irrigation systems, signal and semaphore systems,—wherever pipe is exposed.

Specify Spang "Copper-Clude" and be sure of getting the genuine copper-steel pipe—made by America's oldest pipe manufacturers.

All Spang "Copper-Clude" is painted a solid Maroon. If it is galvanized it carries two bright Maroon stripes.

SPANG *copper-clude* PIPE

SPANG, CHALFANT & CO., INC.

General Offices: CLARK BUILDING, PITTSBURGH, PA.

Sales Offices:

NEW YORK BOSTON PITTSBURGH CHICAGO
TULSA LOS ANGELES DALLAS BIRMINGHAM

Welded Mills: ETNA, PA., SHARPSBURG, PA.

SPANG
WELDED STEEL PIPE

Looking For Reasons Why This Wrench is Better?

Then Look Here

Replaceable insert jaws that renew the sharp bite again and again at trifling cost.

and Here

No fragile exposed spring to be damaged when hard usage comes along.

and Here

A handle drop forged, not cast, of special analysis steel, scientifically heat treated for extra strength.

All Steel TRIMO Pipe Wrench

TRIMO

Made by

TRIMONT MFG. CO., INC.

ROXBURY (BOSTON), MASS.

The Measure of Your Message

Written for the benefit of those who purchase white space for the purpose of advertising their wares or the wares of their clients

A GLANCE at a few old-fashioned standards discloses such examples as a "stone" for the measure of weight, a "hand" as the measure of height, and a "barley-corn" as a measure of length.

That these are from a primitive makeshift method of establishing units is shown by their origin. The "stone" was based on a conveniently sized actual stone that was taken as a standard. The "hand" as measured by the palm of different men varied probably as much as three inches. The "barley-corn" was an approximation of the length of a grain and naturally inaccurate.

Not Uniform

The "foot" was once the length of the foot of the ruling chief of a tribe and when a new chief arose the "foot" was altered to equal that of the new ruler. Centuries after the origin of these units it became necessary for purposes of uniformity to adopt a legal, standard foot and pound which were put in safekeeping. From these, many identically equal measuring units were made.

"The most progressive Advertisers and Agencies decide by A. B. C. Reports"

Thus arose the accurately defined unit of measure, which enabled traders and merchants to buy and sell with exact knowledge of the quantity of goods involved in their business transactions.

Accuracy Essential

How many merchants today would buy lumber measured by

a "foot" which might be ten inches or thirteen inches long? Or coal measured by a "stone" the exact size of which is not known?

The first essential for successful buying and selling is a standard invariable unit of measurement. Not only in buying lumber and coal but in buying circulation for advertising purposes. To define this unit and measure the quantity of circulation in unit terms for the Advertiser and Advertising Agency, thus putting space buying on a scientific basis, is the function of the Audit Bureau of Circulations.

What Are A. B. C. Reports?

The Audit Bureau of Circulations is a co-operative association of the leading Advertisers, Advertising Agencies and Publishers of Canada and the United States. It was organized in 1914 for the purpose of auditing and verifying circulation information submitted by the Publishers, and disseminating the results of these investigations to advertisers in the form of A. B. C. reports.

A. B. C. Reports show "How many copies were sold"

A staff of over fifty auditors is working in the field daily auditing the statements of publisher members. Each man is an expert trained by the Bureau in the special methods necessary for publication auditing.

The circulation reports issued by the Bureau give exhaustive information not only as to the exact Quantity of Circulation but also Where it is distributed, How it was secured and other Data upon which to base an estimate of Quality.

A. B. C. service provides in easily accessible form complete Facts on almost all worth-while publications of Canada and the United States.

The Value of Facts

Information such as that furnished by A. B. C. reports is essential. Not to take advantage of this service is to lay out a Campaign with dull tools — to work in the dark.

A. B. C. Reports show "Where the copies were distributed"

No Substitute for Facts

There is no substitute for Facts. It is often asserted that the figures of the Post Office statements submitted to the Government or other unverified statements are sufficiently reliable, but this is not the case. The Total Net Paid figures of these statements may be true in the eyes of the publisher submitting them but they are not comparable to A. B. C. figures because "they are not in the same language."

Almost every name on the mailing list of the non-A. B. C. publisher is considered a "subscriber" for statement purposes,

whereas only those persons who pay at least 50% of the subscription price and are not in arrears over six months are counted as bona fide subscribers on an A. B. C. report.

Surely it would pay the buyer of space to ignore Post Office figures or any other unverified data and base his decision on verified A. B. C. information.

Facts for the Advertiser

The information required by the A. B. C. forms covers data which the Advertiser and his Agency must have to place Campaigns intelligently. By referring to these reports, the user has at his disposal verified data covering all the vital questions that arise when considering a publication as an advertising medium. A. B. C. reports give impartial facts which, when used properly, enable the Advertiser to buy 100 cents' worth of advertising for every dollar spent.

The wise business man knows that only by employing the most up-to-date methods and equipment can effective results be assured. The careful Advertiser who uses A. B. C. reports is utilizing the most important modern working tools available and is therefore laying a better foundation for success in his campaigns.

A. B. C. Reports show "How Subscribers were obtained"

A. B. C. reports set forth the facts on circulation in a manner available no other way.

The Modern Standards

An advertiser may possibly carry on a successful campaign by using antiquated, haphazard methods of buying space without the full facts contained in A. B. C. reports. But every buyer of advertising is honor bound to analyze the distribution of publications and scientifically choose those that will show the *greatest* returns. Developing a profitable business from a campaign is not enough—one should be assured by analysis of A. B. C. reports that all possible profit is being secured in the territory covered.

Change Wrought by A. B. C.

The A. B. C. has introduced standardized methods and put Uniformity and Certainty into what was hitherto a chaos of guesswork. It is performing a service for Advertisers and Agents which is of real value in saving hundreds of thousands of dollars formerly wasted on unprofitable, fictitious circulation. The expense of digging out the same information would be prohibitive if attempted by these companies themselves. The most economical method is the A. B. C. co-operative way by which the expense is spread over all parties interested.

Nearly all the prominent Advertisers, Agencies and Publishers recognize the importance of the Bureau. It is to the few that still do not realize the business value of A. B. C. Membership that this is addressed.

Co-operation Desired

The Bureau, in its constructive work designed to place all buying and selling of advertising space on the business-like basis of full measure for every dollar, can justly expect the support of those companies who benefit by this work. The co-operation of every reputable Publisher, Advertiser and Agency is desired. They should be represented in the conferences of their respective divisions of this association and help to determine the direction of development.

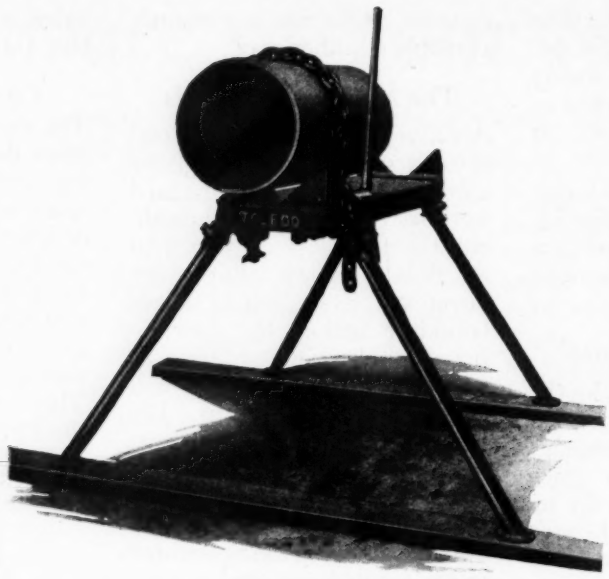
The A. B. C. Certificate is a symbol of high ideals in business

Unanimous Support

The continued success and advancement of the A. B. C. idea means continued progress for the Agencies and Advertisers profiting by the Circulation Certainty brought about by the A. B. C.

With such interdependence of interest it is reasonable to hope that those publishers, advertisers and advertising agents not now belonging to the A. B. C. will soon decide to add their names to the roll of this organization which is successfully doing for them a service.

In the Ten Billion copies of A. B. C. publications of Canada and the United States distributed annually, an Advertiser can purchase Space with the assurance that he will get full value for each Dollar expended, if he or his responsible officers or agents will study the Facts and Figures given in Audit Bureau of Circulations Reports. Domestic Engineering is a member of the A. B. C. and would be pleased to submit a copy of its latest report.



THIS STURDY "TOLEDO"—

—NO. 9 WORK BENCH CAN NOW BE PURCHASED AT A NEW LOW NET PRICE

The "TOLEDO" No. 9 Work Bench with Chain Vise capacity 2" to 12" has been reduced to a new low net price.

This Sturdy Work Bench is so rugged and strong that it is practically indestructible. The Jaws are made of steel castings and can be removed and resharpened.

The Vise is so constructed that a single thrust of the controlling lever grips the pipe securely. The table is 12 inches wide and 4 feet long. Ample room for tools and other equipment. Demountable, simply loosen U-bolts and legs slide out. Can be bolted to floor or fastened to skids, if desired.

The strongest, most desirable Work Bench and Vise for pipe up to 12 inches on the market today.

Write us for complete "TOLEDO" catalog on Pipe Tools of Superior Merit.

"TOLEDO"

THE QUALITY LINE OF PIPE TOOLS

THE TOLEDO PIPE THREADING MACHINE COMPANY

TOLEDO, OHIO NEW YORK OFFICE, 72 LAFAYETTE STREET

DOMESTIC
ENGINEERING
DECEMBER 27, 1930

Our Industry

Some of those in the plumbing and heating business are rounding the corner into the new year satisfied with their use of the opportunities offered in 1930. Many others are using the past year as the scrap heap on which to pile a record of stagnation and loss, counting in some mysterious way upon 1931 making a better record for them.

♦ ♦

They forget that records are made by those who work for them and not by those who wait for them.

♦ ♦

How many contractors, salesmen, wholesalers or manufacturers used 1930 as a year of opportunity?

♦ ♦

The fact that this past year earns that title is proved by the examples here and there of those who have made real progress.

♦ ♦

Your opportunity as a part of the plumbing and heating industry is usually translated into terms of how much business you did or how much money you made.

♦ ♦

The bookkeepers' reports alone do not tell the whole story.

♦ ♦

Actually, a more accurate measuring rod is one which will show whether or not you have made yourself more essential.

♦ ♦

If your position as a retail distributor, a wholesaler or a producer is more firmly established this Christmas than it was a year ago, you have made progress and proved 1930 was a year of opportunity.

♦ ♦

Many of us glibly repeat phrases and words, approving their application generally but refusing to interpret them in our own business.

♦ ♦

For instance, take some of the common phrases:

"Changing methods are appearing in every industry."

"Manufacturers in different lines are taking over sources of production and are beginning to protect themselves with outlets for distribution."

"Mass production has cut costs. The problem now is to lower the cost of distribution."

♦ ♦

In some unknown but happy fashion, many of those in this industry seem to take it for granted that the economic changes which are radically affecting every American business will pass over this industry.

♦ ♦

Without making any changes in their business practices, without bothering to study how they can adapt their methods to modern needs, these men are taking it for granted that when business picks up it will pick them up at the same time.

♦ ♦

No one can foretell exactly what changes are coming.

♦ ♦

Research was necessary to bring about improvements in production methods. Then the desire of the public for these changed products had to be cultivated. All of this took a long time.

♦ ♦

In the same way, research is now being turned to distribution methods.

♦ ♦

What it will find is not clear, but we know some change is inevitable. And it will not take so long to make these changes as they will be within the control of the industry rather than dependent on changing the public's buying habits.

♦ ♦

Our most sincere wish for 1931 is the hope that each reader of this column will use the New Year to strengthen his position by a record of performance. It is the only way in which he can expect profits.

◆

The success of every business is mainly dependent upon the management.

Long and Short Methods of Solving Plumbing and Heating Mathematical Problems

By ARTHUR BRANCH

ALL measurements are approximations and few, if any, are exact. A pound of meat is a certain weight of meat but it is not a definite quantity of meat; and what is a pound of meat today may not be a pound of meat tomorrow because it may dry some and the weight will be reduced correspondingly. A gallon of water is a certain quantity of water but at 200 deg. Fahr. there will be less water by weight in a gallon than at 62 deg. Fahr. A pipe, 100 ft. long when it is erected, may be 100 ft., 1¼ in. when steam is turned into the line or it may be less than 100 ft. in length if the temperature goes down to freezing and there is no steam in the pipe to keep it hot. A ton of coal may be exactly a ton when it leaves the dealer's coal pocket (wet) but it may be considerably less after it has been delivered and allowed to dry out.

So it will be seen that weights and quantities, and even dimensions, are not very dependable when exactness is desired. Materials themselves are subject to change sometimes from moisture, sometimes from heat, or from other causes; the length of a steel tape even is subject to variation with every change in temperature. It will be the object, therefore, in this article to illustrate methods of securing results which are practically correct and entirely close enough for average use even though the calculations are not carried out to the second and third decimal place.

The Circle

Since nearly all pipe and many tanks are cylindrical in form the circle forms the basis of almost all calculations concerning pipe as well as those involving round tanks. Let us familiarize ourselves with the circle somewhat before endeavoring to apply it to practical problems. Many persons have an erroneous idea of what a circle really is. If you say to the average person, "Draw a circle," he will pick up a compass and draw the circumference of a circle; the "circle" itself is the area or portion of the plane included within the circumference. The circumference of a true circle is, at all points, equally distant from the same point within, which inner point is called the center.

A straight line passing through the center of a circle and terminating (on each end) at the circumference is called the diameter; a circle may have an infinite number

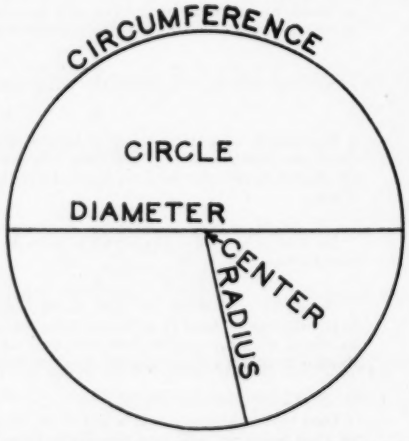
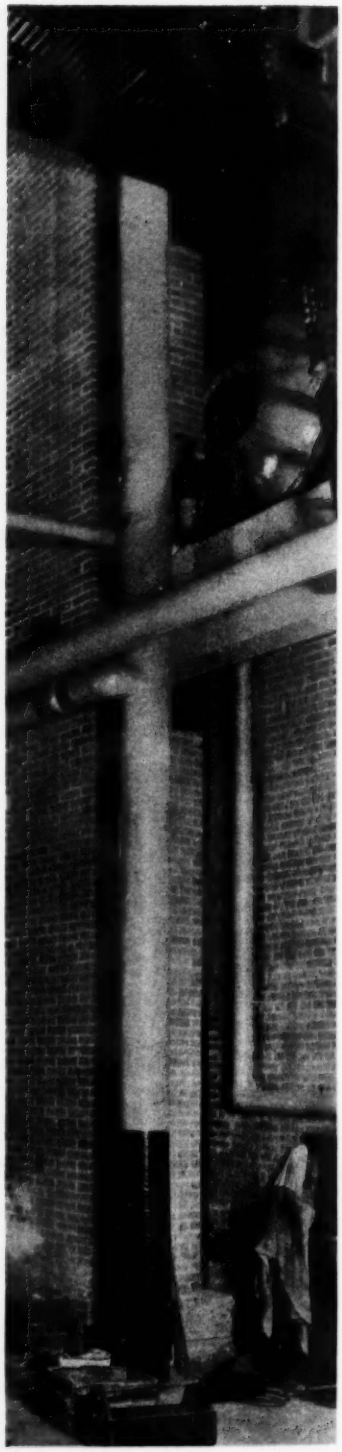
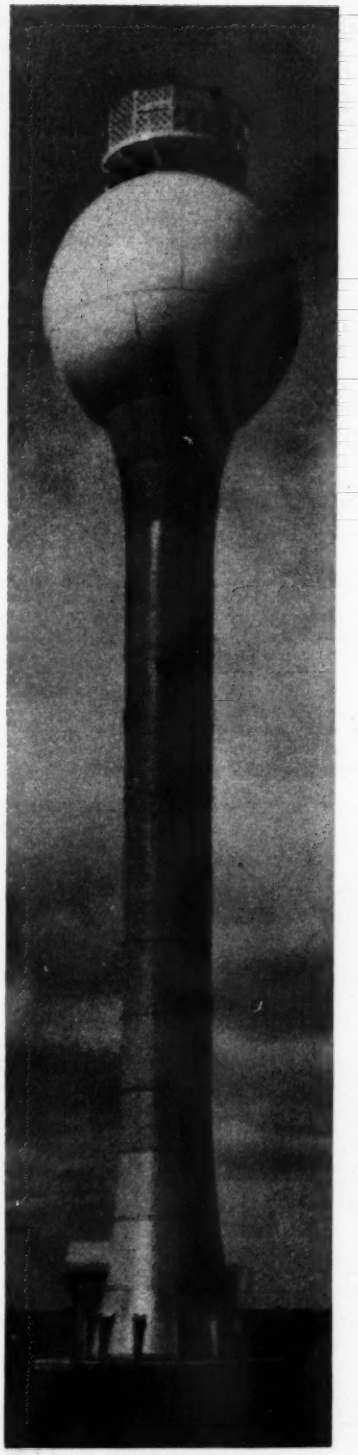


Fig. 1—Diagram with the various terms descriptive of a circle



A practical application of the information given in this article. In order to know what a system will do or how it will operate it is necessary to know its capacity. Accordingly, the question arises, what is the capacity of the riser and the tank. It is answered by applying the simple rules given



While the average plumbing contractor will not be called upon to build a structure of this kind, he is indirectly interested in it because it gives him his water pressures. This water tank is 21 ft. in diameter and has a capacity of 30,000 gal. of water. The platform at the top is 94 ft. above the ground. With this data, the water pressure at the bottom may be calculated

The most complicated structure consists of a combination of simple and basic parts. Higher mathematics are merely a logical development of the fundamentals. Accordingly, it is imperative that the fundamentals be thoroughly understood as they form the foundation. This article is concerned with the subject of simple mathematics and its application to the problems of the plumbing and heating contractor.

of diameters but they are all the same length so it is immaterial which diameter is used. In fact when the expression "the diameter" is used it really means any diameter. Half a diameter—or the distance from the center to the circumference—is called the radius. These various terms are illustrated in Fig. 1 where the circle, circumference, diameter and radius are plainly marked.

Now let us consider the relations between the various parts of a circle; beginning with the diameter by which the size of the circle is usually designated it will be seen that this is twice the length of the radius. If the radius is designated by the letter "R" and the diameter by the letter "D" the relation of D to R is expressed by the formula

(1) $D = 2R$ or dividing both sides of the equation by 2 we get (2) $\frac{D}{2} = \frac{2R}{2} = R$ or $R = \frac{D}{2}$

For example: What is the radius of a circle 4 in. in diameter? Using formula (2) $R = D \div 2$ and substituting, $R = 4 \div 2$ or $R = 2$ in. Similarly what is the diameter of a circle if the radius is 6 in.? Using formula (1) $D = 2R$ and substituting the value of R the formula becomes $D = 2 \times 6$ or 12 in.

The relation of the circumference to the diameter is a much more complicated matter. Mathematicians have carried out the decimal portion to over 100 decimal places without arriving at an exact result. Comparing the circumference of a circle to the diameter has shown that the length of the circumference is slightly over 3 times or $\frac{22}{7}$ times the length of the diameter; probably 3⅛ times is as near a ratio as will be desired for ordinary use with common fractions. If a slight excess is desired for a lap or seam 3¼ is used. The ratio, actually, is 3.14159 plus; but this usually is shortened to 3.14. Then if the circumference is represented by the letter "C" and the diameter by "D" the relation may be expressed by the formula

(3) $3.14 \times D = C$ or (4) $\frac{C}{3.14} = D$; and since $D = 2R$ this formula also may be written

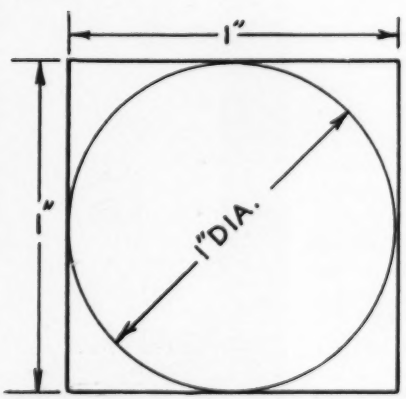
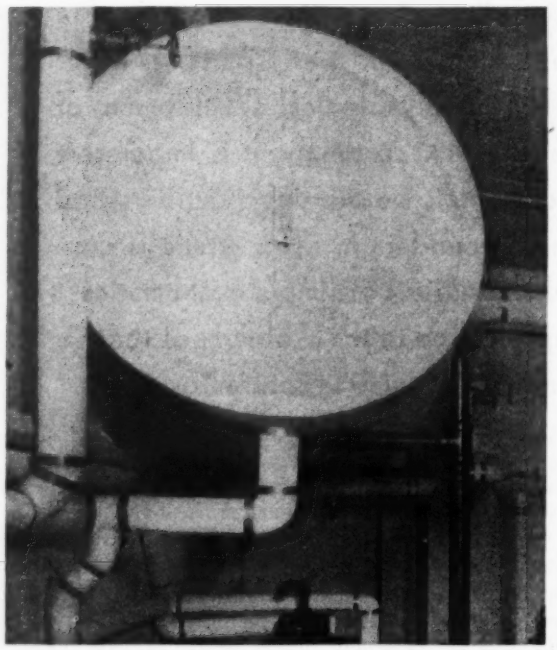


Fig. 2—The area of the circle is approximately ¾ the area of the square in which it is inscribed

(5) $3.14 \times 2R = C$ or (6) $\frac{C}{3.14} = 2R$.

For example: What is the length of the circum-



Another instance when it is necessary to know the capacity of a cylindrical tank. This is for hot water storage

ference of a 3-in. diameter circle? Using formula (3) $3.14 \times D = C$ or 3.14×3 in. $=$ 9.42 in. or if the short cut of $3\frac{1}{8}$ is used the formula becomes $3\frac{1}{8}\ D = C$ or $3\frac{1}{8} \times 3 = 9\frac{3}{8}$. Similarly what is the circumference of a circle with a 3 in. radius? Using formula (5) $3.14 \times 2 \times 3 = C$ or 18.84 in.

There is one other function of the circle which must be considered and that is the area. It is known that in a square the area is the length multiplied by the breadth but this does not follow in the circle owing to its rounded shape. In Fig. 2 has been shown a square where the sides are 1 in. in length; the area of the square is 1 in. $\times$ 1 in. or 1 sq. in. Inside of the square has been drawn a circle with a diameter of 1 in. It readily can be seen that the area of the circle is considerably less than the square; in fact it is only about $\frac{3}{4}$ as much or about $\frac{3}{4}$ sq. in. This area has puzzled mathematicians almost as much as the matter of the circumference because the area is one-quarter of the product obtained by multiplying the diameter by the circumference. So if the diameter is taken as 1 then the circumference will be by formula (1) $3.14\ D = C$ or $3.14 \times 1 = C$ or $C = 3.14$ and the area will be (7) $\frac{D \times C}{4} = A$; if "A" represents the area. Placing the value of C in place of the letters the formula becomes

$$\frac{D \times D \times 3.14}{4} = A$$

or

$$\frac{3.14\ D^2}{4} = A$$

or

$$0.7854\ D^2 = A$$

For example: What is the area of a 4 in. diameter circle? Using formula (7)

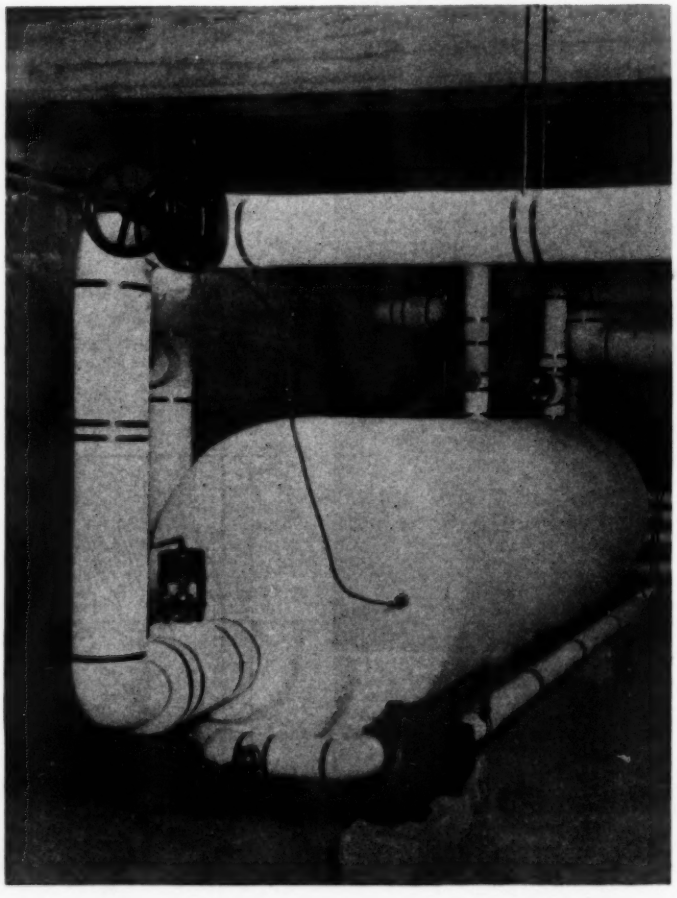
$$\frac{D \times C}{4} = A \text{ and substituting}$$

$$\frac{4 \times 4 \times 3.14}{4} = A$$

$$12.56 \text{ sq. in.} = A.$$

Had this decimal (0.7854) worked out 0.75 then the area would be exactly $\frac{3}{4}$ as much as a square with the sides equal to the diameter of the circle. Actually the area is about $\frac{35}{1{,}000}$ or 0.035 more than the even three-quarters. So if a square is first assumed whose side is equal to the diameter of the

Just any tank would not work in this installation. It was required to be of a definite size and capacity, calculated by fundamental mathematics



circle, and if the area of the square is computed and multiplied by the decimal 0.7854, the area of the circle results. Then the area of the circle may be expressed by the formula.

(8) $A = D \times D \times 0.7854$ and is commonly expressed as D square $\times$ 0.7854 or

(9) $D^2 \times 0.7854 = A$

or

(10) $0.7854D^2 = A$

in which D^2 simply means $D \times D$ and represents the area of the square while 0.7854 is the proportion of the area of the square included within the circumference of the inscribed circle. Applying this formula to the 4 in. diameter circle previously considered the area is found to be by formula (10)

$0.7854 \times 4 \times 4 = A$ or 12.3664 sq. in.

or with the short cut of ¾ the approximate area would be

¾ of $4 \times 4 = 12$ sq. in.

All the above may sound somewhat involved but may be summed up in three statements, viz:

(a) The radius is half the diameter.
(b) The circumference is a little over 3⅛ times the diameter.
(c) The area is a little more than ¾ of the diameter multiplied by itself.

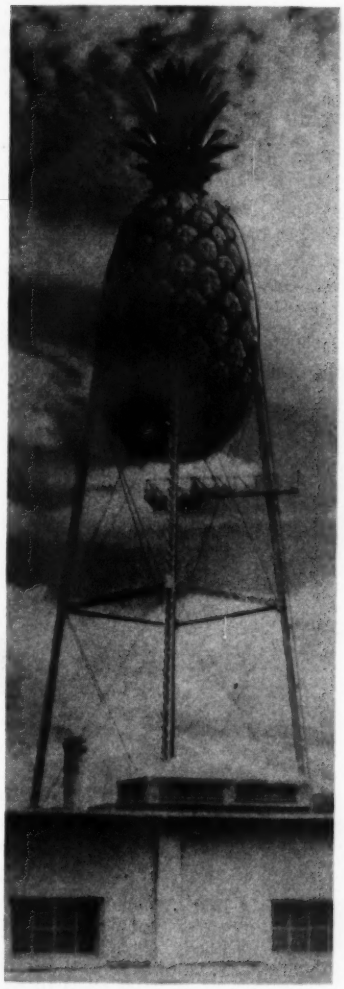
Length—Width—Height

A "line" has (theoretically) no width, and no depth—it has only length.

A "surface" has both length and width but no depth.

A "solid" has length, width and height (or depth).

Examples of "lines" are the diameter of a circle, the circumference of a circle, the side of a square, etc. In surfaces are included squares, circles, rectangles and other plane figures; in solids there are cylinders, cubes, prisms, spheres, etc. This distinction must be kept clearly in mind in making calculations. Lines are usually spoken of as "lengths," surfaces as "areas" and solids as "volumes." Thus, the length of the line, the area of the surface, and the volume of the solid.



Another water tower which, although it is unusual in design and appearance, is basic in that common mathematics are used calculating the water pressure it creates

The Cube

In the cube (see Fig. 3) the width, length and height are all the same and if the width is represented by "W," the length by "L" and the height by "H," the volume "V" is obtained by multiplying these three lengths together thus

(11) $L \times W \times H = V$.

and as W, L, and H are the same they may be represented by the same letter —say "S" which is the length of one side. Then the formula becomes

(12) $S \times S \times S = V$.

or

(13) $S^3 = V$.

this S^3 simply being a short way of expressing $S \times S \times S$. For example, what is the volume of a cube 2 ft. long on a side? Using formula (13) $S = 2$ and $2^3 = V$ or $2 \times 2 \times 2 = V$ which is 8 cubic feet.

In the oblong (see Fig. 3) where the length, width and height are all different, or where one of them is different from the other two, formula (11) must be used. For example: What is the volume of an oblong tank 4 feet high, 7 feet long and 3 feet wide? Using formula (11) $W \times L \times H = V$ or $3 \times 7 \times 4 = 84$ cu. ft. For the cylinder (see Fig. 3) the volume is found, by taking the area of the bottom, or top (A), and multiplying it by the height (H) as shown herewith.

(14) $A \times H = V$.

For example: What is the volume of a cylinder 2 ft. in diameter and 6 ft. high? The area of the base is the area of a 2 ft. diameter circle which by formula (10) is $D^2 \times 0.7854$ or $2 \times 2 \times 0.7854 = 3.1416$ sq. ft. Then by formula (14) $A \times H$

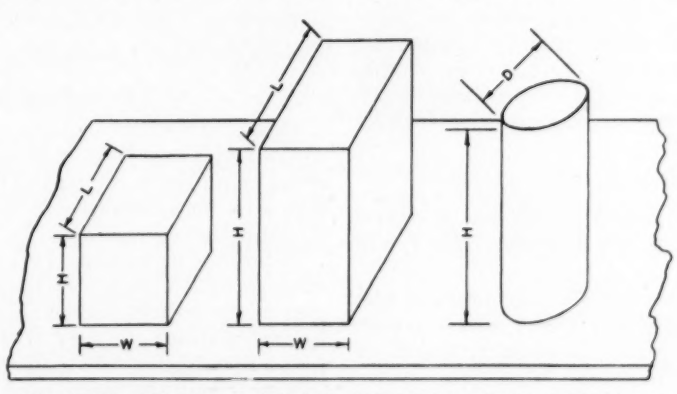


Fig. 3—The cube, the rectangular solid and the cylinder. The volume in each case is found by multiplying the area of one end by the length

$= V$ or $3.1416 \times 6 = V$ or 18.8496 cu. ft. The approximate short cut would be (2 ft. $\times$ 2 ft. $\times$ ¾) $\times$ 6, or $3 \times 6 = 18$ cu. ft.

Results Depend Upon Correctness in Calculating

One very important item is to remember that the results given in any formula or calculation depend entirely on the correctness of the calculating (multiplying, dividing, adding and subtracting) and the designation of the result will depend on the designation of the factors producing the result. For example, "inches times inches" will give "square inches" and "feet times feet" will give "square feet." In order to facilitate references made in the balance of this article the equivalents given in Table I are included.

Table I

Inches × inches = square inches.
Inches × inches × inches = cubic inches.
Square inches × inches = cubic inches.
Feet × feet = square feet.
Feet × feet × feet = cubic feet.
Square feet × feet = cubic feet.
1 sq. ft. = 144 sq. in.
Square inch ÷ 144 = square foot.
1 gallon = 231 cu. in. or 0.133 cu. ft. (2/15 cu. ft.).
1 gallon of water = 8.34 lb. (8 1/3 lb.).
1 pint = 28.8 cu. in. or 0.018 cu. ft. (1/60 cu. ft.).
1 cu. ft. = 1,728 cu. in.
1 cu. ft. of water = 62.42 lb. = 7.48 gal (7½ gal.).
1 cu. in. = .0043 gal.
1 ft. of water head = 0.43 lb. per sq. in.

A few practical problems now will be considered: The first is this:

In a rectangular tank, where the water level stands 12 in. below the top, there will be contained how many gallons of water if the inside dimensions of the tank are 4 ft. 6 in. wide $\times$ 6 ft. 0 in. long $\times$ 5 ft. 0 in. high?

As the water stands 12 in. below the top, the water will be only 4 ft. 0 in. deep, so that the problem becomes thus: how many gallons of water are contained in a volume 4 ft. 6 in. $\times$ 6 ft. 0 in. $\times$ 4 ft. 0 in.? According to formula (11) the volume is obtained by multiplying the length by the width and by the height or

$$L \times W \times H = V$$

in which V is in cubic feet if L, W, and H are in feet; but if L, W, and H are in inches then V will be cubic inches.

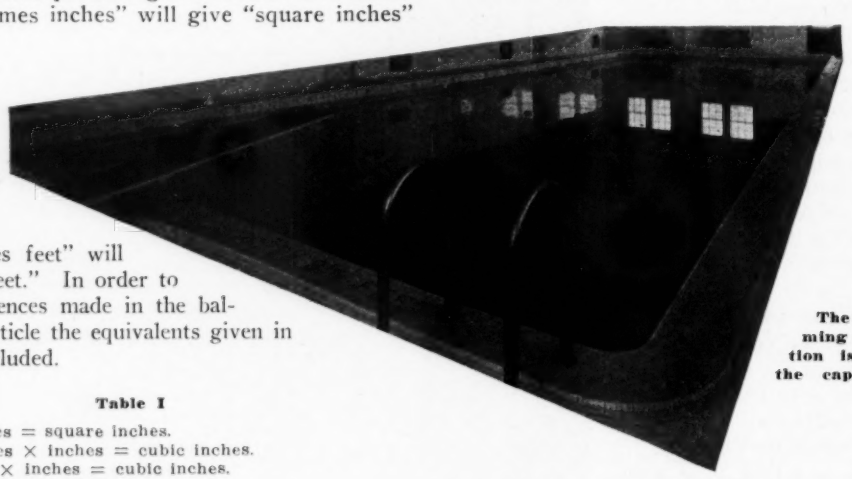
Suppose the dimensions are all to be taken in feet so as to produce cubic feet of volume; then 4 ft. 6 in. must be changed to feet and the quantity 4½ ft. or 4.5 ft. must be used. Based on "foot" dimensions the problem works out as follows:

$$6 \text{ ft.} \times 4\tfrac{1}{2} \text{ ft.} \times 4 \text{ ft.} = 108 \text{ cu. ft.}$$

Change Cubic Feet to Gallons

Having obtained the number of cubic feet of water it is necessary to change this to gallons. In Table I it states that there are 231 cu. in. to a gallon and 1,728 cu. in. to one cubic ft. So, the 108 cu. ft. will be changed to cubic inches and then the cubic inches will be divided by 231 to find the number of gallons. Thus:

$$108 \text{ cu. ft.} \times 1{,}728 \div 231 =$$
$$186{,}624 \text{ cu. in.} \div 231 = 807.9 \text{ gal.}$$



The entire swimming pool installation is based upon the capacity of the tank

This same problem calculated by the inch method requires that all dimensions of the water be reduced to inches, multiplied together to get cubic inches and divided by 231 cu. in. to change into gallons. This is shown below.

6 ft. 0 in. = 72 in.
4 ft. 6 in. = 54 in.
4 ft. 0 in. = 48 in.

Then

$$72 \times 54 \times 48 \div 231 = 807.9 \text{ gal.}$$

Now for the short cut:

In Table I it is found that there are approximately 7½ gallons to a cubic foot so all that is necessary to be done for approximate results is to multiply the cubic feet by 7½, thus:

$$(6 \times 4\tfrac{1}{2} \times 4) \times 7\tfrac{1}{2} \text{ or}$$
$$108 \times 7\tfrac{1}{2} = 810 \text{ gal.}$$

against 807.9 gal. computed by more accurate means.

Cylindrical Tank

The second problem is to take a similar tank of cylindrical shape and to compute the quantity of water contained if the tank is 6 ft. 0 in. diameter and 8 ft. 0 in. high, standing on end with the water line 3 ft. 0 in. below the top.

According to formula (14) the cubic contents, or volume, of a cylinder is found by multiplying the area of the bottom by the height of the cylinder and by formula (10) the area of the bottom can be computed by squaring the diameter and multiplying by 0.7854. Using the "foot" method with all dimensions in feet the problem becomes

(Continued on Page 115)

How to Use the Telephone

By a telephone man:

ROY F. WRIGHT
Illinois Bell Telephone Co.

TELEPHONE courtesy attracts customers, and since thousands "call up" where but few "drop in," the telephone becomes not only a convenience but a most valuable business asset. Use your telephone, "the voice of business," to extend and establish enduring business relations.

In these days, with the ever increasing tendency to transact more and more business by means of the telephone, a firm's reputation for utilizing efficient business methods is often judged by the way in which the telephone is used.

Guard against your voice becoming mechanical. Use a personal interest tone; a real desire to help should be evidenced by your voice. Rising inflection will accomplish this. To the patron you represent the firm and express the personality of the business. Use of the correct "telephone voice" in business will go a long way toward smoothing out trouble when differences arise or mistakes are made. People are irresistibly drawn to business houses whose telephone greetings are cheery and courteous.

Talk slowly and articulate carefully, speaking directly into the transmitter with the lips about one-half inch from the mouthpiece.

When Receiving a Call

Answer your telephone promptly and pleasantly. When your bell rings someone is waiting, and a prompt answer is businesslike and courteous. Avoid such terms as "Hello" and "Yes." Use an informative answer, such as your name or that of your office or department, or both, for example: "Sanitary Plumbing Co., Miss Jones speaking."

Have a pencil and pad available in case notations are required so as to avoid keeping the calling party waiting. Let him know that you are not only capable, but anxious to perform a satisfactory service.

If the calling party requests an individual who is not in, ask: "Will you talk to anyone else?" Or, since the person who is left in charge of a plumbing and heating store must of necessity take care of calls, say: "Perhaps I can help you."

If the person calling wants to speak to the absent one in person, be sure to ask: "Do you care to have Mr. Blank call you upon his return?"

If so, fill out a proper call slip with the name and number of the party calling, the time of the call and any other information likely to be of value to Mr. Blank.

If the caller does not wish to talk to an alternate or leave word for the person desired, ask, "May I be of any assistance to you?" or "May I tell Mr. Blank who called?"

Be guided by the reply. Give the calling party your undivided attention. If you must leave the line temporarily, notify the calling party and tell him why, for example: "One moment, please. I will send for that data and give it to you very shortly," or "It will take a few minutes to total the figures, will you wait or shall I call you?" Listen attentively to avoid repetition. Be brief but not abrupt.

When Making a Telephone Call

Always look in the latest telephone directory for the correct number. Memory plays strange tricks.

When your party answers, identify yourself by giving your firm name and your name, for example: "This is the Sanitary Plumbing Co., Miss Jones speaking."

Be ready to talk when your party answers. He has been interrupted in his work and the burden of courtesy is upon you.

Avoid having others call numbers for you.

Close your conversation so as to leave no doubt in the mind of the other party by saying: "Good-bye."

The telephone today is an important instrument in the business world, as this telephone company official points out. Its use reflects the management policies of the establishment, and it may be made the source of satisfactory or unsatisfactory contacts with the public, depending upon how it is used

Date	Room No.	Size of Room		Type of Radiator	Nominal Area of Radiator Sq. Ft.	Location of Radiator	Air Temperatures, F.						Air Temperature Differences, F.				
		Length	Width				Outside		"Floor Line," 3" above Floor	"Comfort Line," 30" above Floor	"Breath. Line," 60" above Floor	"Ceiling Line," 3" below Ceiling	"Floor Line" to "Comfort Line"	"Comfort Line" to "Breath. Line"	"Breath. Line" to "Ceiling Line"	"Floor Line" to "Breath. Line"	"Floor Line" to "Ceiling Line"
							Average for 24-hr. previous to Test	At Time of Test									
1-16-30	212	19'-6"	12'-0"	Wall	27.0	Under Window	+12.1	+ 8.3	69.6	69.9	69.4	71.1	0.3	− 0.5	1.7	− 0.2	1.5
1-22-30	212	19'-6"	12'-0"	Wall	27.0	Under Window	− 0.9	−10.0	66.6	66.0	66.8	68.0	− 0.6	0.8	1.2	0.2	1.4
Average	212	19'-6"	12'-0"	Wall	27.0	Under Window	.....	− 0.9	68.1	68.0	68.1	69.6	−0.15	0.15	1.45	0.0	1.45
1-16-30	214	13'-0"	12'-0"	38", 2 Col.	36.0	Beside Window	+12.1	+ 7.8	67.6	71.9	78.5	86.5	4.3	6.6	8.0	10.9	18.9
1-22-30	214	13'-0"	12'-0"	38", 2 Col.	36.0	Beside Window	− 0.9	− 9.5	61.4	66.2	73.0	79.9	4.8	6.8	6.9	11.6	18.5
Average	214	13'-0"	12'-0"	38", 2 Col.	36.0	Beside Window	.....	− 0.9	64.5	69.1	75.8	83.2	4.55	6.7	7.45	11.25	18.7
1-23-30	214	13'-0"	12'-0"	Wall	21.0	Under Window	+ 1.0	+ 4.3	65.5	66.8	67.4	67.7	1.3	0.6	0.3	1.9	2.2

Table 1—Data on rooms, radiators and air temperatures

By A. C. WILLARD and M. K. FAHNESTOCK

The frequently asked question

What Is the Heating Effect?

is answered in this article which describes a simple method of evaluating the "heating effect" of different types of heating units

THE investigation of heating rooms by direct steam radiators which has been in progress at the *University of Illinois* for the past three years has included a study of many factors, a few of which are yet to be completed, as follows:

1. Enclosures, shields, and covers.
2. Radiator location in the room.
3. Surface finish on radiators.
4. Storm sash at windows and doors.
5. Type of radiator.
6. Effect of insulation as applied to walls, ceilings and floors, separately and jointly.

Actual rooms subjected to typical winter weather conditions have been used, and in general, the radiator performance has been measured in terms of (1) steam condensed and (2) air temperature conditions maintained in each case. Sufficient data are now available to convince the most skeptical that the testing of direct radiators is by no means a simple matter. It is quite evident that a proper evaluation of radiator performance can not be made on the basis of steam condensation alone. In other words, radiators intended for room heating can not be tested independently of their actual operating environment—as shown by the results secured in the specially designed room heating testing plant used in this investigation and also in the actual rooms reported on in this paper.

In practically all previous tests of radiators, with one notable exception, very little attention has been paid to the range or difference in air temperatures between floor and ceiling. This difference has been found to range from 20 to 2.5 deg. Fahr. in the same room, depending principally on type of radiator, and may also be influenced by enclosures and radiator location to a certain extent. It is, or should be obvious, that a radiator which maintains a "breathing line" (at a level 5 ft. 0 in. above the floor)

temperature of 70 deg. Fahr. and a "floor line" (at a level 3 in. above the floor) temperature of 60 deg. Fahr. or less is not as satisfactory as another radiator which may maintain a slightly lower "breathing line" temperature, but a much higher "floor line" temperature so that the air temperatures surrounding the occupants are much more satisfactory and comfortable in the latter case than in the former. Add to this the fact that the "ceiling line" (at a level 3 in. below the ceiling) temperature may be many degrees lower with the second radiator than with the first, and finally, that a radiator having less actual heating surface may be used in the second case, actually condensing less total steam, and the inadequacy of former radiator testing methods be-

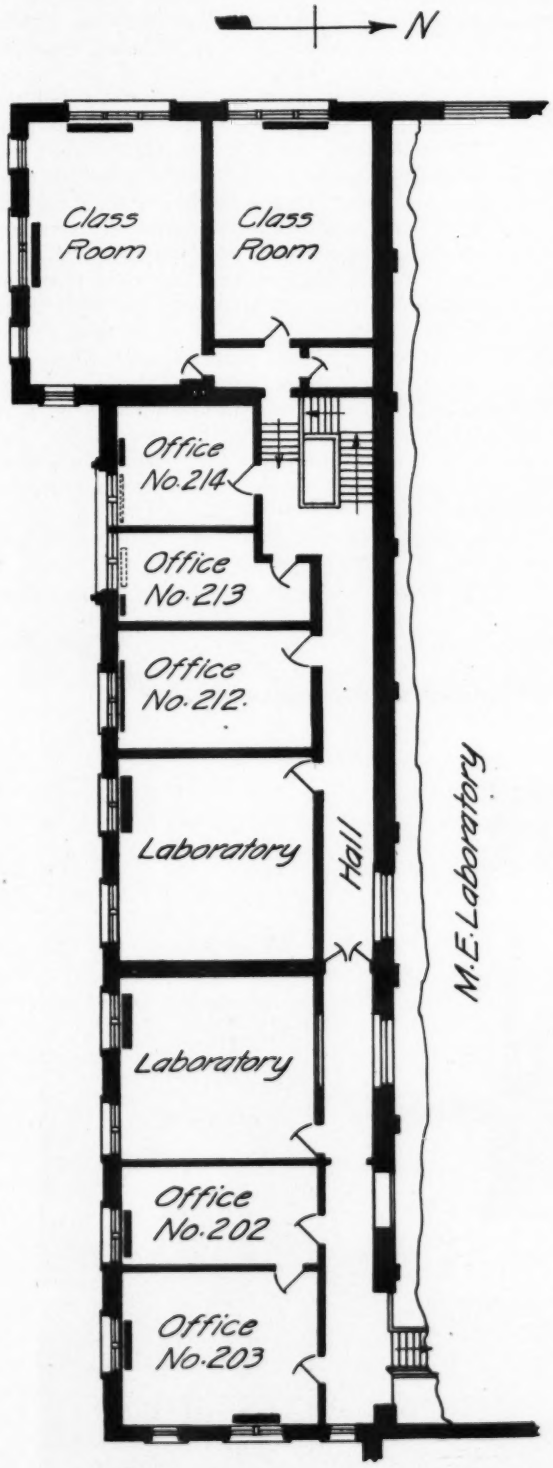


Fig. 1—Plan of the second floor of the south wing of the mechanical engineering laboratory

This paper has three principal objectives. First—that comparisons of the performance of *different types* of direct radiators must take into account the "heating effect" on the air and contents of the room as well as the heat emission or steam condensation of the radiator. (With radiators of the *same type*, condensation tests may serve as a satisfactory basis for comparing the performance of radiators in heating rooms.) Second—that the heat loss from a room may be seriously affected by the *type* of heating unit installed although the heat losing areas remain the same. Third—that air temperatures taken at the "breathing line" 5 ft. 0 in. above the floor may prove a very unsatisfactory basis for comparing the performance of *different types* of heating units.

The paper suggests as a final recommendation a simple method of evaluating the "heating effect" of *different types* of heating units as installed in actual rooms, and illustrates a fundamental principle in the heating of buildings which will receive far more attention in the future than has been accorded it in the past.

The particular types of units dealt with in this discussion are of no special significance, since comparisons between enclosed and exposed units have been found to yield similar results, as well as comparisons between direct and indirect heating systems.

comes a matter of serious concern to manufacturers, installers, and owners.

With a full appreciation of the importance of the above facts as determined in the room heating testing plant at the *University of Illinois,* carefully conducted field studies in many actual rooms heated by various types of direct cast-iron steam and water radiators have been in progress during the heating season of 1929-30. These correlating field tests have confirmed the laboratory tests in every particular and will appear in full in a future bulletin of the Engineering Experiment Station. The present discussion presents data on studies of room air temperatures with two types of direct cast-iron radiators operating on low pressure steam.

Description of Rooms and Radiators

The layout of the rooms (Nos. 212 and 214) which are a part of a group of offices on the second floor of the mechanical engineering laboratory at the *University of Illinois* is shown in Fig. 1. The ceiling height of each room is 10 ft. 0 in. and the ceilings are of lath and plaster with no insulation. The same attic extends over all of the rooms. This attic is about 10 ft. high at the peak in the center, the slate roof sloping downward and meeting both side walls of the building at the eaves. The temperature of the air in the attic as measured with three thermometers located 3 in. above the upper surface of the ceilings of the rooms, during the periods when data were taken, was practically uniform and ranged

from 30 to 35 deg. Fahr., depending upon the outside temperature and the amount of sunshine striking the attic roof.

The floors of all the rooms are of concrete about 4½ in. thick and covered with heavy cork linoleum. The air temperatures below the floors of the rooms varied from about 65 to 70 deg. Fahr.

The exposed walls of the rooms are of brick, 13 in. thick, with no insulation, and the exposed wall and glass areas are the same in both rooms. There is no weather-stripping or storm sash on any of the windows, which are of the ordinary double-hung type, so that both rooms have the same amount of window cracks. The ceiling of room 212 has an area of 234 sq. ft., which is 78 sq. ft. more than the area of the ceiling in room 214. Otherwise, the heat losing areas and infiltration openings are the same in both rooms.

Consideration of this difference in ceiling area will be discussed later.

The 27 sq. ft. radiator in room 212 (Fig. 2) was a long, low, narrow cast-iron wall type consisting of three 9 sq. ft. wall sections placed just below the windows. The 36 sq. ft. radiator in room 214 (Fig. 3) was a cast-iron 38 in. high, 2-column type of 9 sections located against the wall beside the window. An uncovered drop riser and branch at the ceiling supplied each radiator with steam at a temperature of about 230 deg. Fahr., and the run out to radiator in room 212 was 2 ft. 6 in. long, or an area of 1.1 sq. ft.

Conditions Under Which Data Were Taken

Certain precautions must be observed in taking air temperature measurements in a room if reliable and comparable data are to be obtained. All of the data were obtained under similar conditions and are, therefore, directly comparable. They were obtained from 9:00 to 10:00 a.m. on mornings following continued low outside temperature for periods of at least 24 hours duration. The average outside temperature for the 24-hour period preceding each test is included in Table 1, along with the outside temperature at the time of the test. The temperature for the 24-hr. period is probably the more important of the two, as the effect of varying outside temperatures on air temperatures within a building will always lag behind variations in the outside temperature.

The readings were taken in the mornings because at that time the rooms had not been disturbed from the state of equilibrium arrived at during the night when they were unoccupied. Doors to all rooms were always kept closed at least 12 hours previous to recording any temperature data. On the nights preceding the mornings when data were to be taken, all windows and doors were closed and locked, and all radiators were checked and found to be venting properly. Fig. 4 shows a sample data sheet which greatly facilitates the recording of these temperature data.

The equipment for taking room air temperatures both quickly and accurately is shown in detail in Fig. 5. A telescoping portable wooden standard supporting four

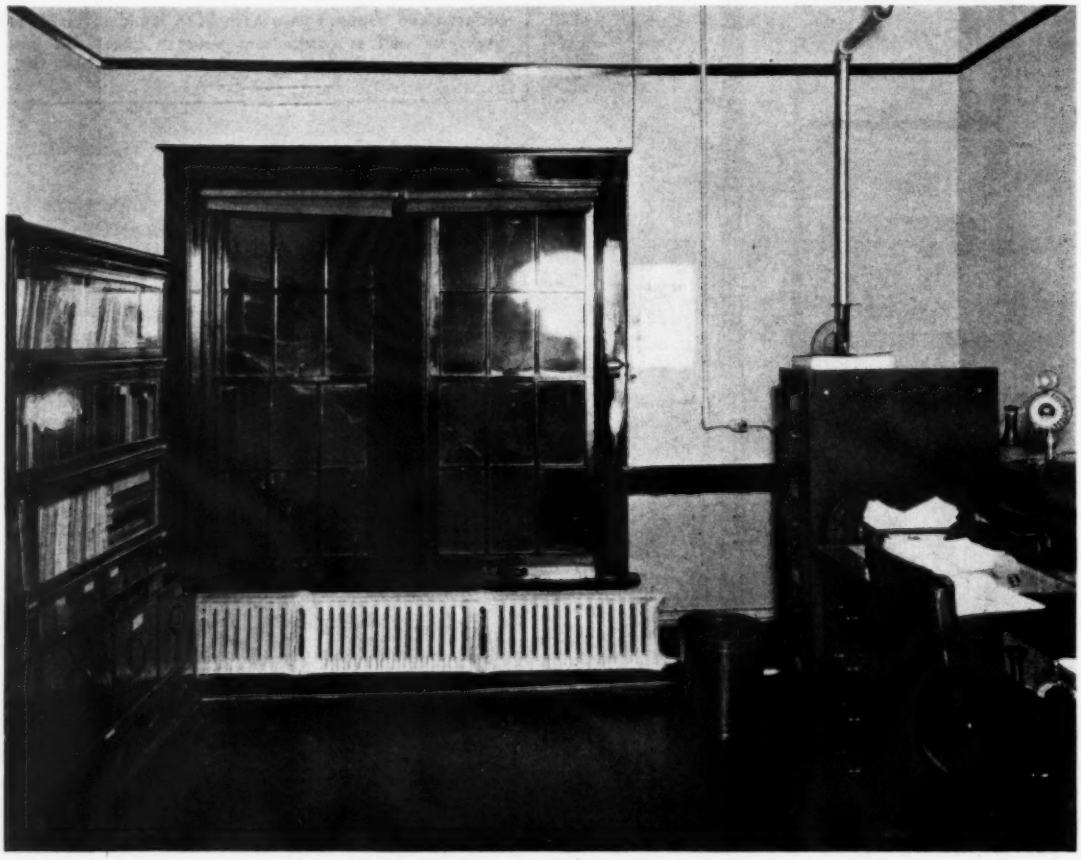


Fig. 2—The wall type of radiator in Room No. 212

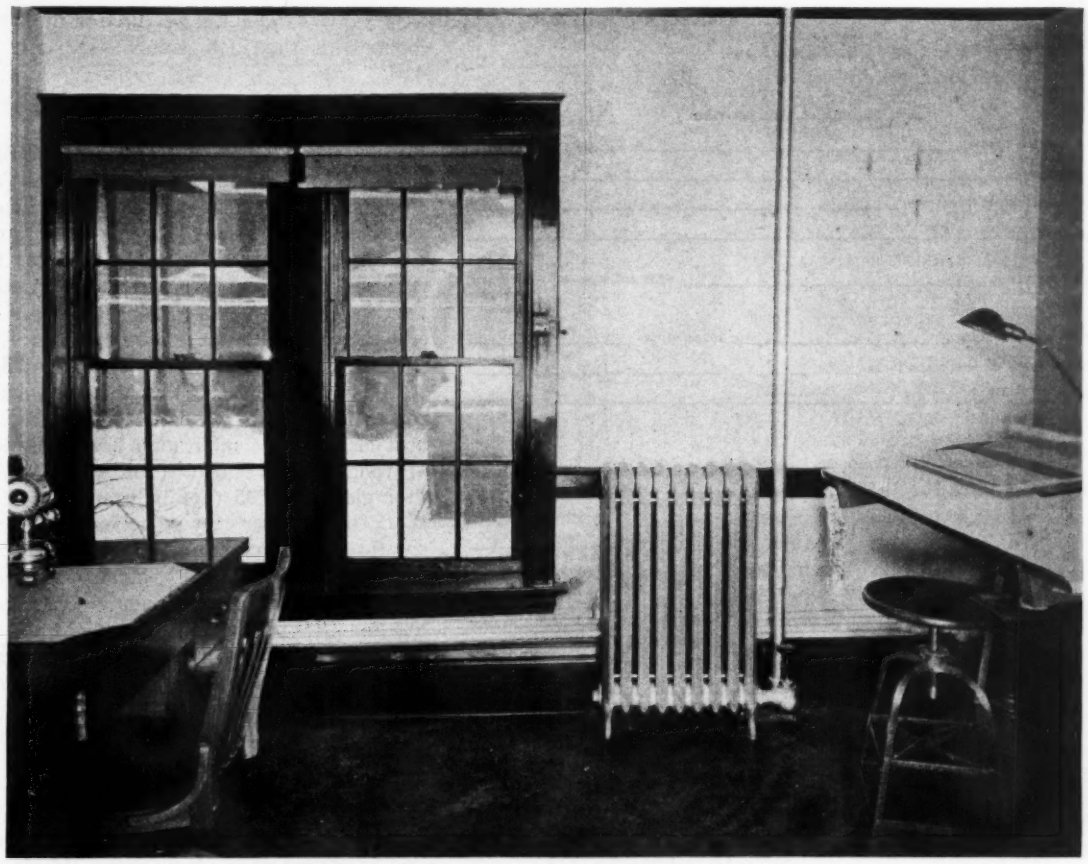


Fig. 3—The column type of radiator in Room No. 214

thermometers at four different elevations, namely, 3 in. above the floor or "floor line," 30 in. above the floor or the new "comfort line," 60 in. above the floor or the usual "breathing line," and 3 in. below the ceiling, or "ceiling line," was used. This standard is adjustable in length, one section sliding inside of metal bands attached to the other section, and is held at any desired length by a thumb screw arrangement which clamps the two sections together. The lower section supports three of the thermometers in *permanent relative positions*, and the upper section, which slides up and down, supports the thermometer 3 in. below the ceilings. The standard is held in a vertical position at the center of the room by wedging it between the floor and ceiling. The ends of the standard are provided with large rubber headed tacks which take the thrust on the standard after it is in place. The thermometers are slipped through rubber stoppers which are held by common chemical test-tube clamps attached to the standard.

No attempt was made to protect the thermometers from or to correct for the slight effect of direct radiation, since this effect is also experienced by the occupants and is one of the factors affecting comfort, the standards being located approximately at the center of the rooms and the minimum distance to any radiator was 7 ft.

Results

In discussing the results it must be kept clearly in mind that these two rooms have substantially the same amount of exposed wall and glass area, although room 212 has 78 sq. ft. or 50 per cent more ceiling area than room 214, and are both exposed to exactly the same outside and inside conditions except for the type and size of heating unit placed in the room. That the additional ceiling area in room 212 had no appreciable effect on differences in air temperatures between floor and ceiling was later proved by actually removing the column radiator and installing a wall type of radiator in room 214. When this was done room 214 showed air temperature differentials exactly similar to room 212.

The results are summarized in Table 1 and reference to the last column and Fig. 6 will show that room 212 with the long, low, narrow radiator had the smaller difference in air temperature between ceiling and floor, namely 1.5 deg. Fahr. for an outside air temperature of + 8.3 deg. Fahr., and room 214 had the greater difference (ceiling to floor) in air temperature, namely 18.9 deg. Fahr. for an outside air temperature of + 7.8 deg. Fahr. The "breathing line" temperatures in these two cases were 69.4 and 78.5 deg. Fahr. respectively, the corresponding "floor line" temperatures were 69.6 and 67.6 deg. Fahr. respectively, and room 214 was badly overheated, especially at the ceiling, which rose to 86.5 deg. Fahr., while in room 212 the ceiling temperature was only 71.1 deg. Fahr. It should also be noted that there was little change in these differences when the outside air temperature dropped to — 10 deg. Fahr., at which temperature room 212 showed a difference (ceil-

STEAM AND WATER HEATING RESEARCH
ENGINEERING EXPERIMENT STATION
UNIVERSITY OF ILLINOIS

Test No. _____ Date _____
Sheet No. _____ Name _____

ROOM TEMPERATURE GRADIENT TESTS

Type of heating system _____
Place made _____
Type of building construction _____
_____
Weather conditions _____ wind and degree (still, moderate, average, high)
Condition above ceiling _____ ; below floor _____
Room comfortable or not comfortable _____
Remarks _____

Floor No. _____
Ceil. Ht. _____

Blr. Press. _____
or Water Temp. _____

Temp. °F.
Dry Bulb | Wet Bulb | Diff.

R.H. _____

Bdg. No.	Time	Out-side Air	Temperatures in deg. F. "A" Reg-ister: 3" Above Floor	"B" Floor: 30" Breath. Level	"C"	"D" Ceil. 3" Below	Differences in deg. F. A to B	A to C	C to D	A to D

Fig. 4—Sample data sheet for recording air temperature studies in heated rooms

ing to floor) of 1.4 deg. Fahr. and room 214 showed a difference (ceiling to floor) of 18.5 deg. Fahr. The breathing line temperatures in the case with the sub-zero outside air temperature of —10 deg. Fahr. were 66.8 and 73.0 deg. Fahr. respectively, and room 214 was distinctly not comfortable with an air temperature 3 in. above floor of 61.4 deg. Fahr. while room 212 was quite comfortable with an air temperature 3 in. above floor of 66.6 deg. Fahr. Also note that the uncomfortable room 214 maintained an air temperature 3 in. below ceiling of 79.9 or 18.5 deg. Fahr. higher than at the floor, while the comfortable room 212 maintained an air temperature 3 in. below ceiling of 68 deg. Fahr. or only 1.4 deg. Fahr. higher than at the floor.

It is now possible to point out that the heat losses from these two rooms are determined not merely on the basis of the area of the heat losing surfaces in walls, glass, and ceiling, as is generally assumed, but the heat losses are also decidedly affected by the type and location of radiators installed and the resulting effect on the air temperatures in the room. For example, the ceiling of room 212 is 50 per cent larger than the ceiling of room 214, yet the average heat loss through the ceiling of the former room with the low wall radiator is 234 sq. ft. $\times$ 0.525 (coef.) $\times$ (69.6° — 32.5°) = 4560 B.t.u. per hr. as compared with 156 sq. ft. $\times$ 0.525 (coef.) $\times$ (83.2° — 32.5°) = 4150 B.t.u. per hr. for the latter room with the high column radiator, or $\frac{410}{4150} \times 100 = 9.9$ per cent more. The average air temperatures from floor to ceiling line are 68.5 deg. Fahr. for room 212 and 73.2 deg. Fahr. for room 214, which on the common basis of an average outside temperature (Table 1) of —0.9 deg. Fahr. reduces the wall and glass heat loss and the infiltration heat equivalent for the former room to $\frac{4.7°}{73.2°} \times 100 = 6.4$ per cent less than the latter room. Since the calculated wall and glass heat loss and the infiltration heat equivalent of room 214 are 1870 (for wall) + 2380 (for glass) + 1705 (for infiltration) = 5955 B.t.u., this 6.4 per cent reduction in air temperature difference through the wall and glass practically offsets (0.064 $\times$ 5955 = 381 B.t.u. as against 410 B.t.u.) the slightly greater ceiling loss (9.9 per cent) of room 212 and we find the two rooms require about the same amount of equivalent (240 B.t.u. per sq. ft.) radiation to maintain approximately the same "comfort line" temperatures of 68.0 deg. Fahr. for room 212 and 69.1 deg. Fahr. for room 214, although the former has decidedly more heat losing surface. Note, however, the *actual radiation* was only 27 sq. ft. in room 212 as against 36 sq. ft. in room 214.

Room 214 was cold to occupants but at the same time *actually seriously overheated,* having an excessive heat loss through the ceiling. Room 212, with a 50 per cent greater cold ceiling area than room 214, was comfortable to occupants, and even after allowing for the higher rate of heat emission per sq. ft. of the wall type radiator in this room as compared with the column type radiator in room 214, actually required no more steam to make it comfortable than room 214 with the 38 in. high, 2-column radiator.

The validity of the above data was further checked by actually replacing the 36 sq. ft., 38-in. high, 2-column radiator in room 214 with a 21 sq. ft. wall radiator of three 7 sq. ft. sections placed under the window. This change in radiators in the same room presented a most striking example of the variation in floor to ceiling temperature differentials as affected by the type and location of radiators. Referring to Table 1 and Fig. 6, it may be seen that with the 36 sq. ft., 38-in. high, 2-column radiator in room 214 placed beside the window the average temperature differential between the floor and ceiling was 18.7 deg. Fahr. with an average outside temperature of —0.9 deg. Fahr. This column radiator was then replaced with the 21 sq. ft. wall radiator of three 7 ft. sections placed under the window. The floor to ceiling temperature differential with this type of radiator placed directly beneath the window was 2.2 deg. Fahr. with an average outside temperature of + 4.3 deg. Fahr. and this value checks very closely with the average temperature differential of 1.45 deg. Fahr. in room 212

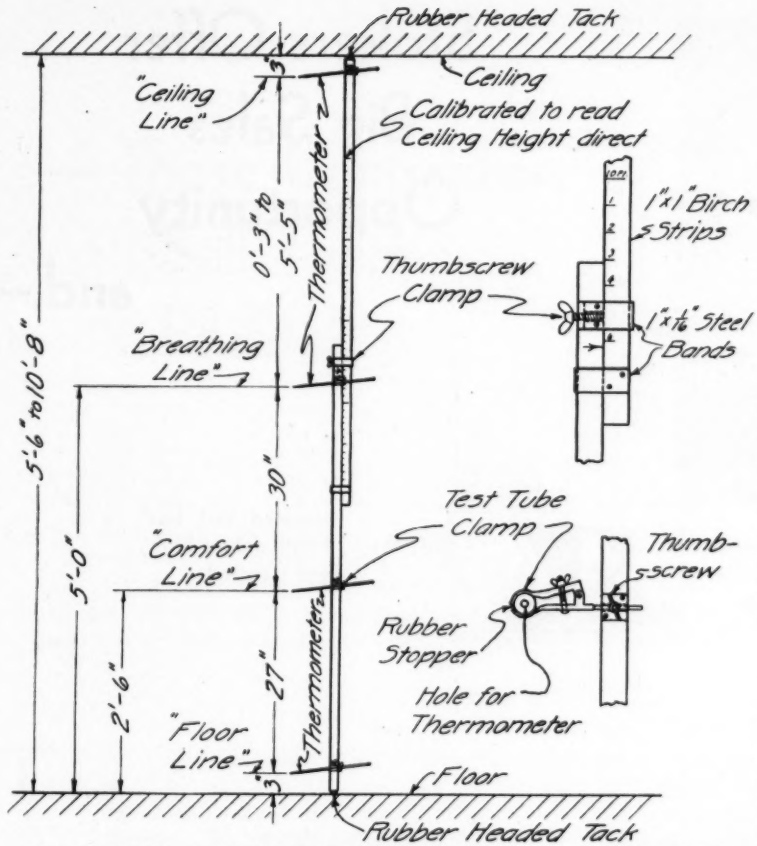


Fig. 5—Portable standard for supporting thermometers used in determining "heating effect" in rooms

which was also heated with a wall type of radiator placed directly beneath the window. This is a reduction of 16.5 deg. Fahr. in the floor to ceiling temperature differential which existed with the higher column radiator.

In Table 1 and Fig. 6, it may also be seen that the large difference in the temperature differential obtained with the two types of radiators resulted from the reduction in the ceiling temperatures maintained by the wall type of radiator. With the average floor temperature 1.0 deg. Fahr. higher with the low wall type of radiator than with the high column type, the ceiling temperature was 15.5 deg. Fahr. lower, having been reduced from an average temperature of 83.2 to 67.7 deg. Fahr. The wall type of radiator, therefore, not only heated the room more comfortably, but also more economically, as the heat loss through the ceiling was materially reduced.

A further illustration of the difference in the performance of the two types of radiators may be obtained by comparing the equivalent rated areas of each radiator. The nominal area of the high column radiator in room 214 is 36.0 sq. ft. and that of the low wall radiator in the same room is 21.0 sq. ft. The coefficient of heat transmission is approximately 27 per cent larger for the wall radiator than for the high column radiator. The area of the additional pipe necessary to install the wall radiator was 1.3 sq. ft. The total nominal area of the wall radiator expressed as equivalent column radiation becomes $(21.0 + 1.3) \times 1.27 = 28.3$ sq. ft. Comparing this area of 28.3 sq. ft. with the original nominal area of 36.0 sq. ft. of the column radiator, it may be seen that the reduction in "equivalent" radiation installed was 7.7 sq. ft. or 21.4 per cent, *but the actual reduction was from*

(Continued on Page 122)

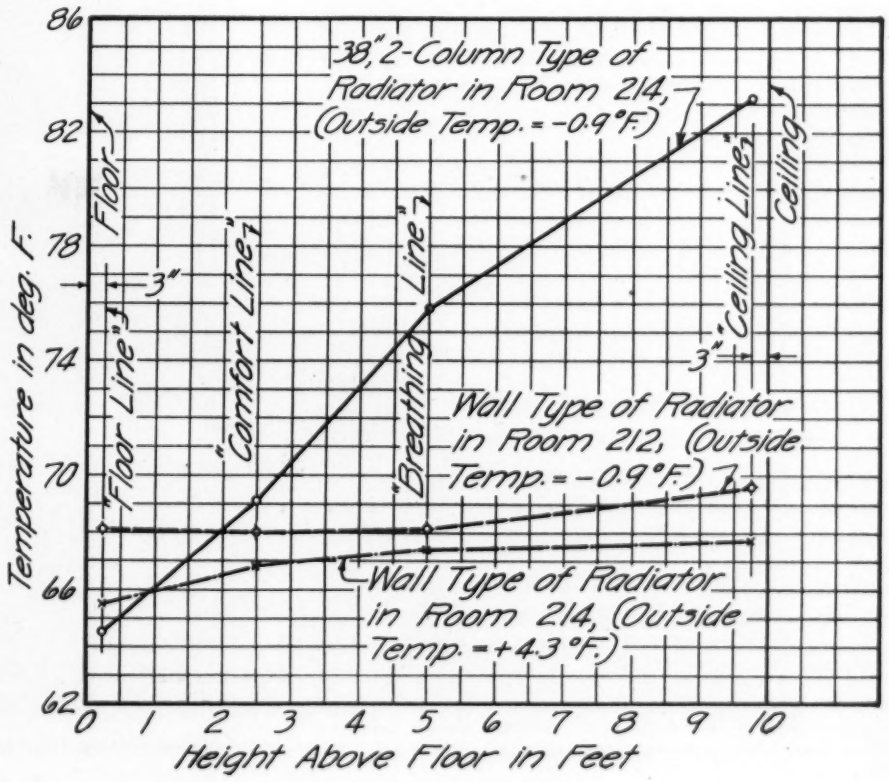
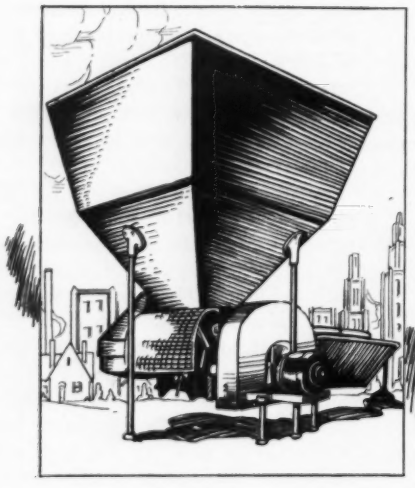
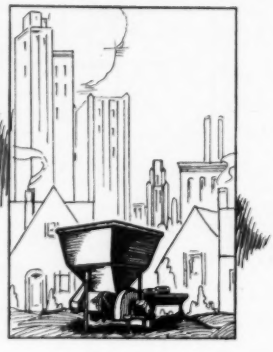


Fig. 6—Air temperature gradients from floor to ceiling for column and wall type radiators. All three radiators maintained about the same temperature at the "comfort line"

Stokers Offer Big Sales Opportunity and—



Total stoker sales possibilities estimated at 9,113,000



It is estimated that less than 35,000 stokers have been installed

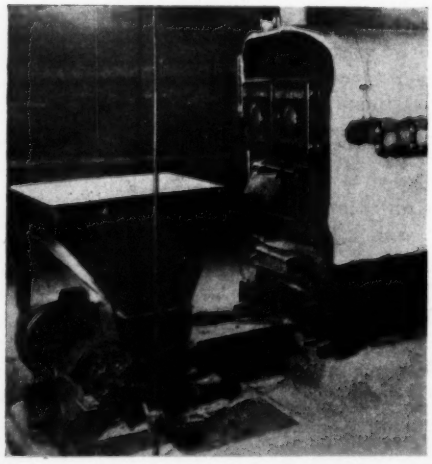
THE size of the domestic* stoker market may be broadly described as consisting of every existing dwelling which is equipped with "radiator heat" plus the annual new construction market similarly equipped. While definite figures are not available on the number of stokers now installed, the National Coal Association recently placed this total at "less than 35,000," including domestic, commercial and smaller industrial types. Other authorities agree that this figure is as nearly correct as it is possible to get.

The most recent estimates, based on the 1920 government census, indicate that there are in round numbers about 25,000,000 one and two family dwellings in the United States. About 35 per cent of these dwellings are equipped with steam or hot water boilers, "radiator heat." This means 9,000,000 existing homes as prospects for stokers (conservative). Also, oil burner sales in all but three states indicate a national market for automatic firing devices which should respond to stoker sales effort.

The annual new domestic heating market, as measured by the yearly shipments of cast iron boilers and radiation, indicates an average potential market from new construction each year for more than 80,000 domestic stokers.

Coal fired tank water heaters of the larger capacities also represent a market for the domestic stoker. It has been conservatively estimated that approximately 33,000 apartments and commercial and educational structures are built each year. This group must be added to any total assumed as representing the potential market for domestic stokers.

The dealer must know what he is offering before he can sell a device

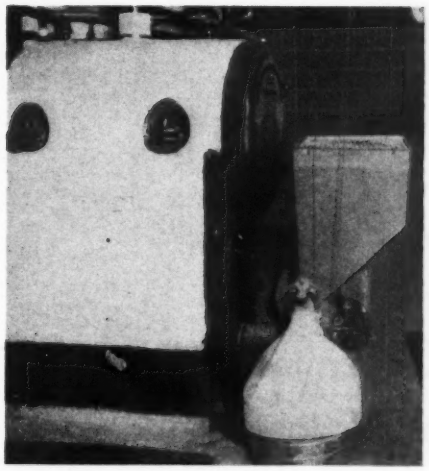


The total estimated potential stoker market in the domestic field is as follows:

In existing dwellings	9,000,000
New construction (for any single year)	80,000
For large coal-fired tank water heaters	33,000
Total stoker sales possibilities	9,113,000

* The word "domestic" is used in all that follows as a qualifying word to distinguish the field and market described from that of the commercial and industrial stoker.

—These Contractors Sell Them Profitably



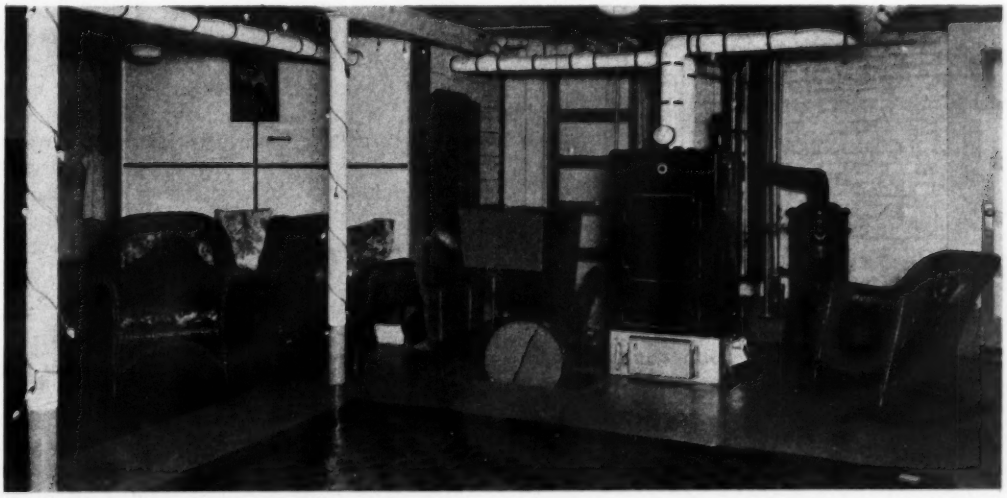
The dealer must be able to install and service properly

The Modernizing Idea is one which lends itself to any number of applications. Any product of the plumbing and heating industry representing an advance in the mechanical features or the style of bye gone days fills this need. Among such products is the stoker for domestic use—and we here tell, briefly, how contractors are reaping profits from the merchandising of this equipment.

THE Dauphinee Co., plumbing and heating engineers of Providence, R. I., employs a number of men who visit present and prospective users of coal for heating. No high pressure salesmanship is employed, but every effort is made to have each user so thoroughly satisfied that he will say nothing but good words about his stoker and in that way aid sales. Each user is called upon about three times during the heating season. These calls are made without any request being received from the user. Two permanent displays are maintained by the company, which it finds to be its most effective form of advertising.

J. N. Palmer of Utica, N. Y., is a heating contractor. Primarily his interest is in heating installations, but he is not overlooking the remodeling opportunity in connection with heating plants already installed for coal-burning. During a seven-month campaign, Mr. Palmer sold more stokers than in the preceding twelve months. He says concerning the selling of stokers: "From my point of view this campaign has been so successful that it has been adopted as standard practice with me."

In securing appointments over the telephone, Mr. Palmer estimates that about fifty per cent of his calls result in appointments. In his store a heating unit equipped with a stoker, in operation, placed in the display window, has brought many customers.

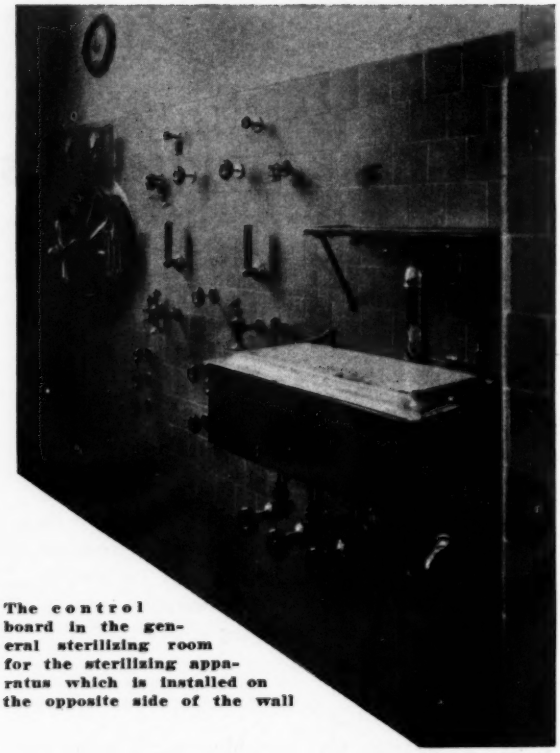


Pictures like this of actual installations help Dauphinee Company's salesmen convince the prospect

How Plumbing Is Installed in Government Construction Work

A typical veterans' hospital job shows government requirements

By R. M. STARBUCK



The control board in the general sterilizing room for the sterilizing apparatus which is installed on the opposite side of the wall

ONE of the duties devolving on the United States government, as a result of our participation in the World War, is the proper care of thousands of soldiers who returned from service incapacitated in many ways. This has meant the erection of hospitals in all parts of the country, for in no other way did it seem possible to meet the situation in an adequate manner.

We understand that thirty-five to forty of these institutions have been established thus far, and in practically every section of the country.

The conditions and the problems that had to be met in this work did not vary greatly between the various hospitals, except of course, in those features dependent upon the location, surroundings, etc., of each separate undertaking.

The work of erecting these hospitals has been a mammoth undertaking, and has been in the hands of a special organization, the United States Veterans Bureau in Washington, D. C.

The fact that in nearly all of the hospitals the same requirements existed, made it possible to standardize equipment, materials, etc., to a very great extent. Therefore, if the plumbing installation of one of these institutions is studied, one will get a very good idea of the work as called for in all the others.

Veterans' Hospital in Connecticut

One of these veterans' hospitals is at the present time nearing completion at Newington, Conn., just outside of Hartford.

It occupies a large tract of land comprising many acres, and its location is a beautiful one.

The plumbing contractor for this Connecticut institution is B. Grunwald, Inc., Omaha, Nebr., this concern having had the plumbing contract for several other similar hospitals.

The Newington hospital, designed for 250 patients, is a large undertaking, as will be seen from the description of the work that follows. Nevertheless, we understand that this particular undertaking is one of the smaller ones, and that some of the hospitals at other points are as much as four times the size of this one.

The hospital that we are considering is to serve the states of Connecticut and Rhode Island, and that part of Massachusetts comprising Cape Cod.

The plumbing contract for one of these veterans' hospitals is unusually complicated. This is made clear by the following, which is taken from the general plumbing specifications:

"WORK INCLUDED: This section of the specifications includes the furnishing and installation complete of the plumbing, sanitary drainage, hot and cold water piping, gas piping, vacuum cleaning equipment, electric refrigerating units for cooling drinking water, and pumping equipment within buildings heretofore enumerated in which plumbing, etc., is required, and outside sewer system, storm water drainage, water distribution piping and gas piping.

General Provisions

"The sterilizers, dental units, and certain portions of the plumbing bakery and kitchen equipment as hereinafter listed and shown on drawings, for the buildings heretofore enumerated will be furnished by the Government F.O.B. cars.

"Plumbing contractor shall deliver all of the above equipment furnished by the Government, from the rail-

road to the buildings in which same is to be placed, on notification from the Superintendent of Construction, and shall set up and install each piece of the apparatus in location shown on drawings, and connect same com-

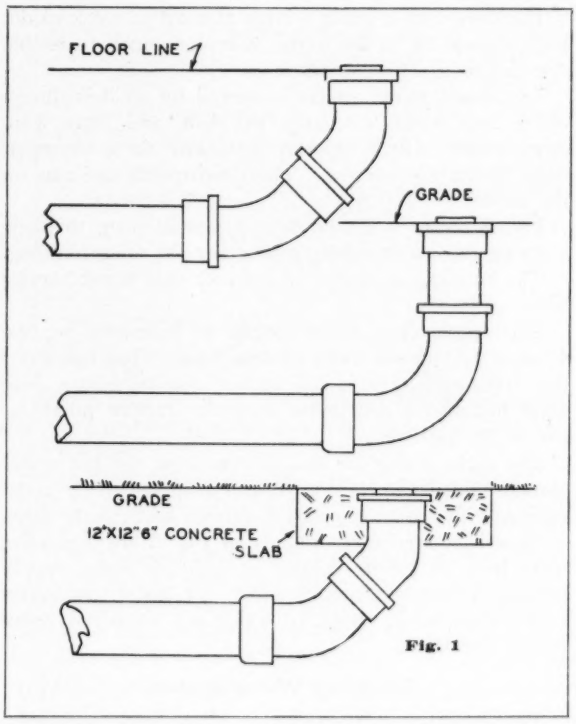


Fig. 1

plete in working order; to the water, waste, gas and vent piping. . . .

"The plumbing contractor and Superintendent of Construction shall examine all parts of apparatus when received or when delivered by the Government to the contractor, and contractor will be held responsible for damage to or losses of any parts of the apparatus while same is in his custody."

From the foregoing, and from many other features of the plumbing contract, it will be seen that it involves knowledge and experience not demanded by the average plumbing contract.

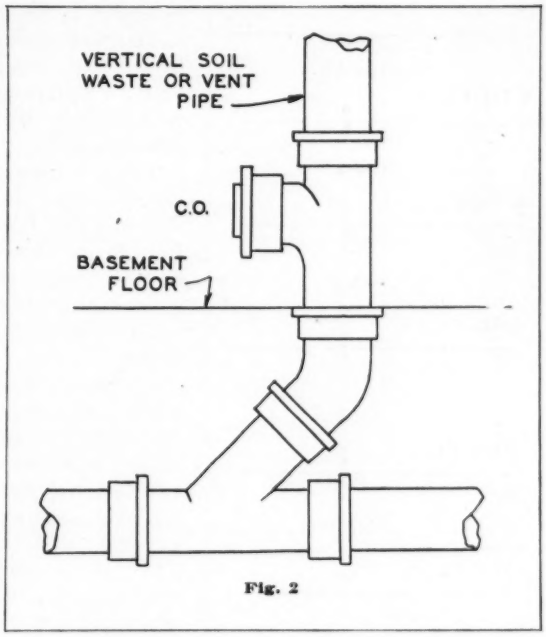


Fig. 2

Extent of Buildings

The entire hospital plant included eight separate buildings, as follows: Main Building No. 1, General Medical Building No. 2, Dining Hall Building No. 3, Recreation Building No. 4, Nurses' Quarters No. 5, Officers' Duplex Quarters Nos. 6 and 7, Sewage Pump House No. 9.

We expect to devote three articles to the consideration of our subject, and even so, and with a large number of drawings to illustrate it, we shall be able to give only a general description of the installation.

Following are interesting requirements for cleanouts:

"Rodding holes shall be installed on cast iron pipe below basement floors or ground where shown on drawings. When rodding holes are located in grass plots outside the building, a concrete slab 12 in. x 12 in. x 6 in. thick shall be placed flush with finished grade, with rodding hole in center of same. Cleanout shall consist of long sweep elbow or two ⅛-bends on end of run, with

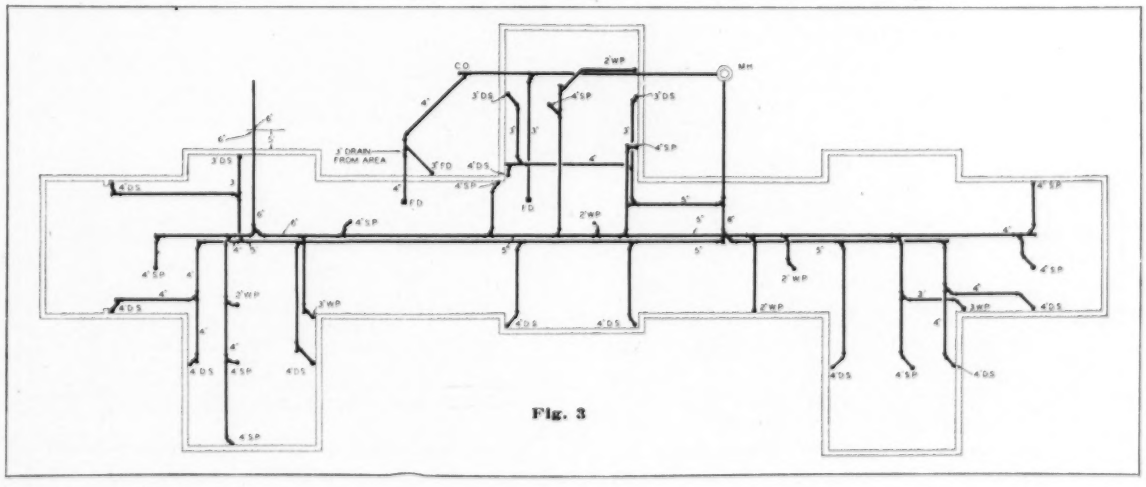


Fig. 3

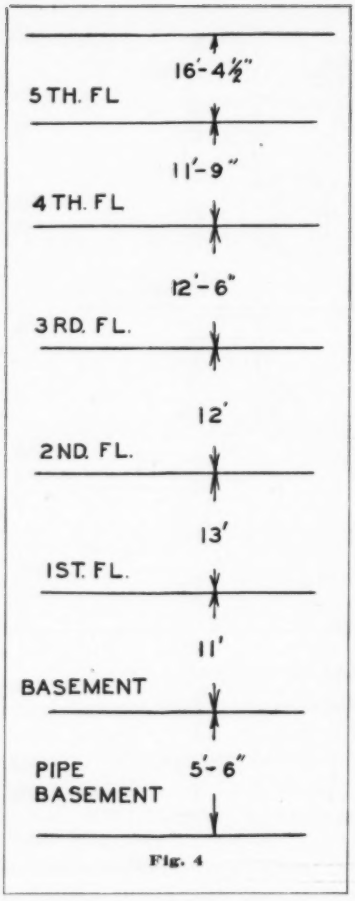


Fig. 4

extension to grade, and terminated with brass trap screw and countersunk plug flush with floor or grade.

These cleanout requirements are shown in Fig. 1. In Fig. 2 are shown the cleanout requirements described in the following:

"A heavy, short-radius, tee pattern, 90-degree, Y-branch fitting, with heavy screw-jointed cleanout plug same size as pipe shall be placed in each vertical soil, vent and waste pipe just above the basement floor or just above ground in unexcavated spaces."

In Fig. 3 is shown the plan of the pipe basement of Main Building No. 1.

Fig. 4, a simple elevation showing the floors in this building, shows six floors with a pipe basement below the basement. The height of the pipe basement is 5 ft. 6 in.

Two Separate Drainage Systems

The building is served by two separate drainage systems, one for the sanitary drainage, and the other for storm and surface water.

The main house drain for the sanitary system is 6 in. in diameter, serving seventeen soil and waste stacks; ten 4-in., two 3-in. and five 2-in.

All horizontal drainage lines are expected to be laid at a grade of ¼-in. to the foot, and ⅛-in. to the foot is the least that will be accepted.

The 6-in. line is given a large amount of work to do, and a grade of ¼-in. seems none too much to enable this size to do effective work.

The storm water system is served by an 8-in. house drain, into which discharge ten 4-in. and three 3-in. downspouts. On a separate 4-in. line three basement floor drains are carried. The downspouts are run on the inside.

Fig. 5 shows a second pipe basement plan, this one showing the water supply piping for the main building.

The building is served by a 4-inch cold water service line.

The regular hot water supply is furnished by two 42 in. x 120 in. hot water storage tanks. The hot water line from each tank is 2½ inches, feeding into a 3-in. main line which distributes it to the various points of use in the building.

The main hot water line is run from the hot water storage tank up to the roof space, dropping to the toilet rooms, with return circulation carried back to the tank.

As will be seen from a study of Fig. 5, there are five main lines of piping connected with the water supply system, including the cold water, hot water, hot water return circulation, tempered water and tempered water return circulation.

Tempered Water System

Tempered water is supplied to all patients' lavatories, bathtubs and shower baths in the building. The water is furnished from a special hot water storage tank, as shown in Fig. 5. This tank is 30 in. x 72 in., and the size of the main flow line is 1½ in.

The tempered water is supplied to patients' fixtures with the idea of avoiding danger of scalding from the regular hot water supply.

From each hot water and tempered water riser to fixtures above the first floor, a ½-in. return circulating pipe is taken, the connection being made at a point just below the highest branch connection on the line. The

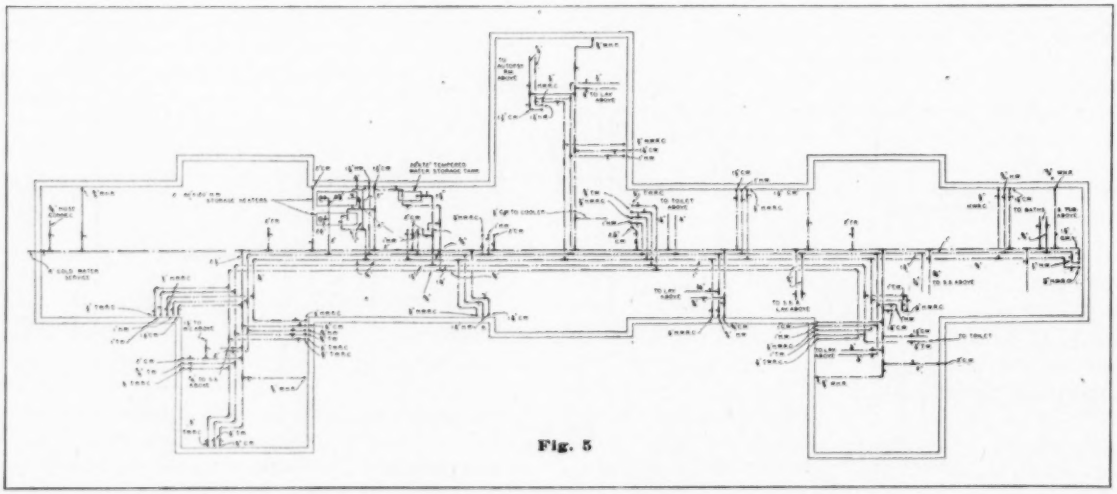


Fig. 5

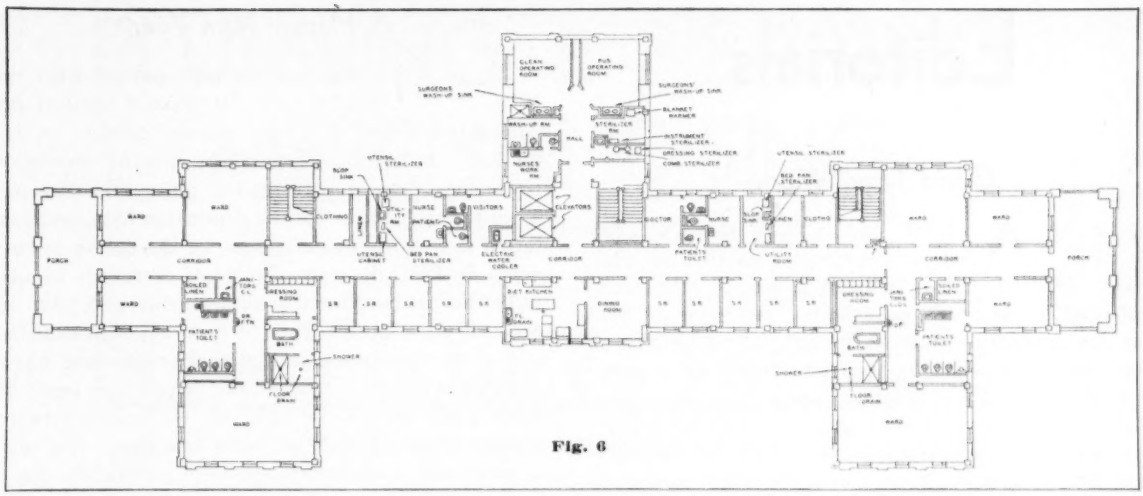


Fig. 6

separate returns or circulating pipes connect into a main in the basement and this is carried back to the hot water storage tank.

The main circulating line at the tank is provided with a gate valve and check valve, with a union between gate valve and tank.

It will be seen that in some instances, all five lines of pipe are carried to the same group of fixtures.

The main cold water, hot water, hot water circulation, tempered water and tempered water circulation pipes to each toilet room and to isolated fixtures are each provided with a gate valve. These valves must not control any other fixtures than those in the one group.

Hot Water Storage

Specifications covering the hot water storage tanks are very complete and explicit.

Some of the requirements are according to the following:

"Heaters shall have a capacity to heat not less than the number of gallons in three hours from 40 to 140 deg. Fahr., with steam pressure at 5 lb. per sq. in.

"All tanks and heaters shall be tested to a hydrostatic pressure of not less than 150 lb. per sq. in., before shipment from factory, and after erection.

"All tanks and heaters shall be equipped with a heating element containing not less than the number of lineal or square feet of surface indicated on the drawings.

"All tanks and heaters shall be equipped with relief valves, set for 100 lb. pressure. Relief valve shall be piped to discharge onto floor at wall near cesspool, or as directed. Also each tank and heater shall have openings properly located for thermostatic tank regulator and mercurial thermometer graduated from 40 to 240 deg. Fahr.

"Each cold water and circulation connection shall have check valve with union on each side of check valve."

The last requirement for check valve on cold supplies to hot water storage tanks seems wrong, and undoubtedly is not enforced. A check valve on this pipe would mean under certain conditions that all chance of expansion back to the source of supply was prevented, which would be a dangerous situation.

Fig. 6 shows a floor plan of the third floor. Naturally, each floor plan in a building such as this shows its own interesting features, but Fig. 6 is typical of the other floors.

Sterilizer Vents

In the front wing there are two operating rooms, out of which are wash-up and sterilizing rooms. Also, off the main corridor are two utility rooms which also contain sterilizing apparatus.

(Continued on Page 127)

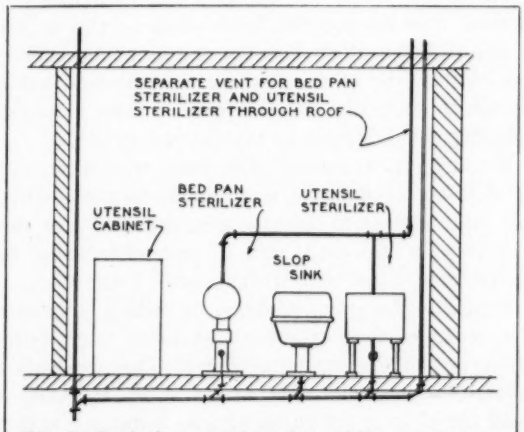

SEPARATE VENT FOR BED PAN STERILIZER AND UTENSIL STERILIZER THROUGH ROOF
UTENSIL CABINET
BED PAN STERILIZER
UTENSIL STERILIZER
SLOP SINK

Fig. 7—Typical connections for utility room equipment

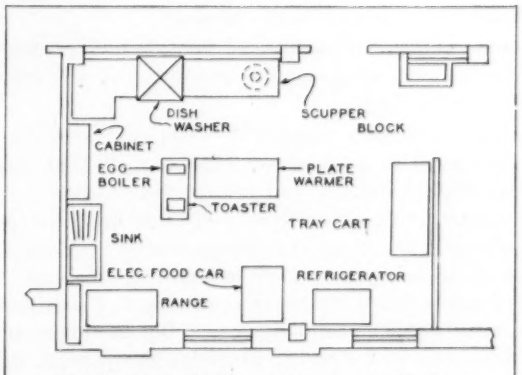


Fig. 8—Diet kitchen—2nd, 3rd and 4th floor

Editorials

Good Team-Work

A YEAR and a half ago, on this editorial page, we carried an editorial entitled, "The Industry's Need." In that editorial we said: "The industry, for its trade extension activities, must be brought to as perfect a state of organization as the sales force of a great corporation. The educational ideas of trade extension must reach every nook and cranny of the industry with the same promptitude that information concerning a new product reaches every member of the sales organization of a great corporation.

"Then, and then only, can the ultimate objective of greater sales volume, maintained consistently, be achieved. It is necessary, in a word, for industry to organize as one great company. Its efforts must be as effective as those, for instance, of the automobile manufacturer, who can introduce a new model to the public, simultaneously in thousands of communities, because there is a perfect, unrestricted flow of plan and idea from the central organizing agency to each one of his retail outlets."

We reviewed in our last issue, the results of our "follow through" effort on selling remodeling jobs. Having given three years to gathering and spreading information on the market for plumbing and heating products in existing structures, in August of this year we felt that the industry was ready to act as a team, to act as if it were "the sales organization of a great corporation."

For there is no doubt, from the manner in which the material which we prepared was received, that the industry did act as a unit, and that the practical selling ideas did reach every nook and cranny of the industry with a promptitude that was surprising. From manufacturer to wholesaler to contractor it went, and in a period of about thirty days it is likely that every contractor who sees a salesman had this remodeling material presented to him at least once, and probably oftener.

Some eighty thousand calls by salesmen on contractors — meaning valuable repetition of the message — were made.

It was a perfect example of what can be accomplished even in an industry like ours, divided into three distinct groups, and numbering thousands of individual units. The majority of those units moved in unison in the study and application of the definite data on securing new work in existing buildings.

It happened that, in this case, DOMESTIC ENGINEERING acted as the "central agency." But the important point is that, given usable, practical information, the industry has proved it can act as a united sales force.

A Happy New Year

IN offering the conventional wish this year, we are conscious of the fact that circumstances give it a very definite promise of fulfillment. It is true that in every time of depression, psychology plays a part—and it plays a leading part when the real causes for the depression have been corrected and we are marking time for the upturn in business. In 1931, the state of mind of everybody is going to be cheered by this fact—comparisons with 1930 figures will show gains. This, by the way, is a factor that one of the foremost commentators on business affairs gives great weight. It will be a "happy new year" because it will begin to be plain that we really are twelve months better off than we were last year. And that, in turn, will accelerate the recovery, so that the happy new year by comparison will, in a few months, be a pleasant one in its own right.

A Premium on Efficiency

WE LEARN that in Europe the buyers of power plant equipment have a definite method for determining choice between competing bidders. A definite cash value is placed upon the efficiency of the equipment offered. Half of the estimated value of each per cent of efficiency above the acceptable minimum is credited to the bid, thus determining the true value of each bid, as compared with the competitive system in our building field, for example, where price alone seems to control.

We are not suggesting that any system like this can be set up in bidding on plumbing and heating. But we do see how an alert contractor could use this fact as supporting his claims for greater value in his bid, which may be "high."

Under the European system, there might be a spread of several thousand dollars between the prices submitted by two firms. But the purchaser, instead of ripping open the bids with a hungry eye on prices, has a look at the prices and then proceeds to reduce them to their true comparative level—their service to him. If one of them offers him ten per cent more efficient service than the other, that greater efficiency will be enough to show that the difference in price is actually reflecting the difference he is to receive in value.

We suggest, in talking with those who must make the decision on contracts, that this practice be cited. It will make clearer to the man who does not give sufficient thought to what is back of price differences, that he can hope to get only what he pays for.

Probably the great problem of selling is to show the prospect that difference in price must reflect difference in the job somewhere. This example of foreign buying methods would make it easier to make this clear to the customer who is inclined to think of price only.

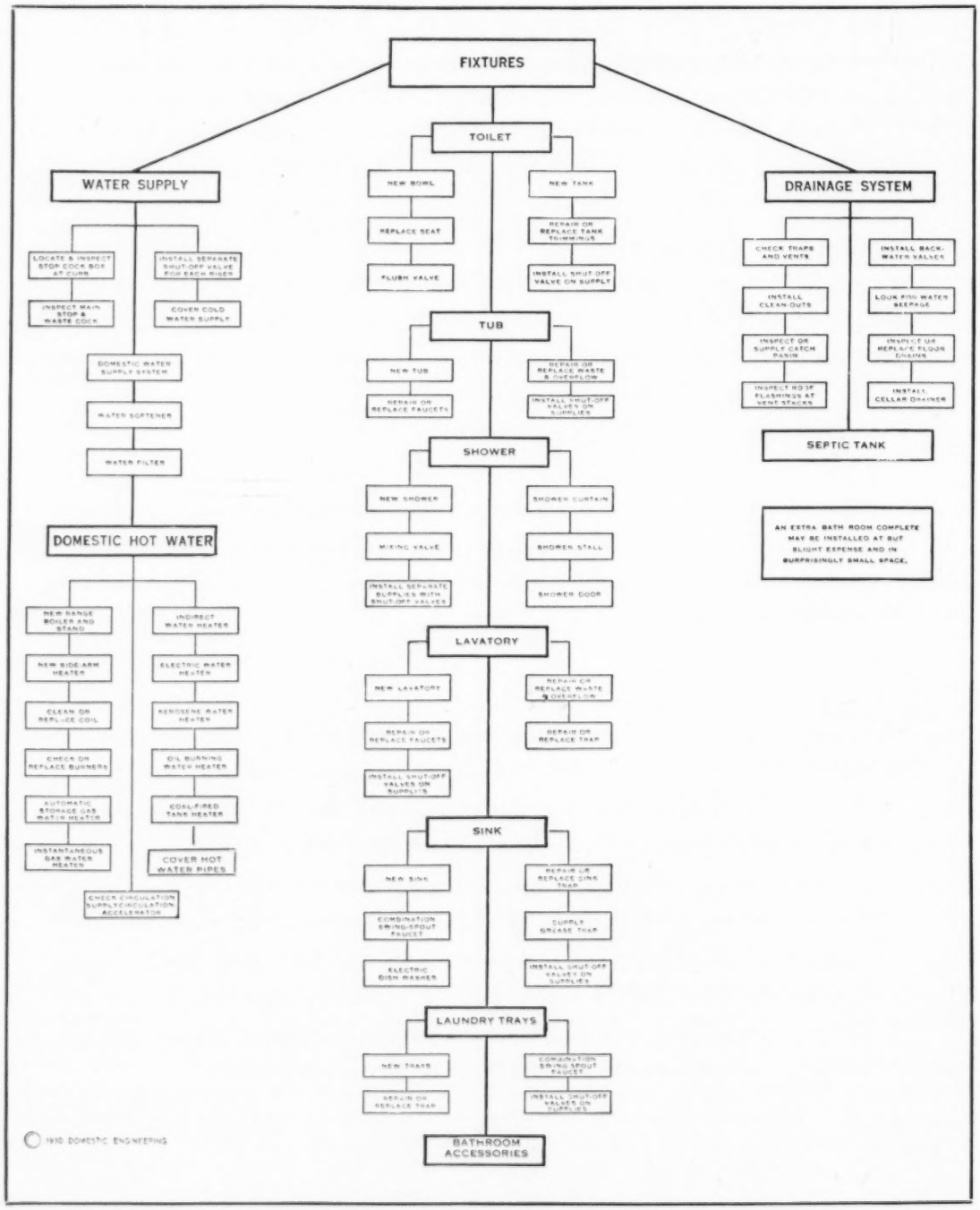
PLUMBING & HEATING MERCHANDISING

New Fixtures for Old

A GREAT many things are working together to make remodeling—by which we mean repair and replacement work—a profitable field for the plumbing and heating contractor. In the first place, people are forced by conditions to lay aside the thought of building new homes. The inability to satisfy that desire causes them to turn a critical eye on the old home and they are in a mood to listen to a proposition that will add to its comfort and convenience. Add to this the fact that the entire building industry in one way and another is promoting that idea. Note that those newspapers which have building pages are devoting more space to remodeling. One of the metropolitan newspapers has, in fact, changed the name of that section of the paper to read "Home Building and Remodeling." A New York City building and loan association holds a remodeled home contest in which hundreds are entered. A national publication holds a contest in which awards are made for modernized basements. In the following pages will be found a set of figures showing to what extent the plumbing and heating contractor participates in the money spent for home remodeling—and he participates generously. Newspapers, chambers of commerce and local modernizing bureaus are popularizing the idea of making the old home a better home. And it must not be forgotten that there is plenty of money for remodeling. Building and loan groups are now active in promoting it; and savings in 1930 have shown a remarkable increase. Repair and replacement jobs must be sold. Contractors who have recognized the value of this market are out selling and getting jobs, as the following pages show—as they have been showing all year.

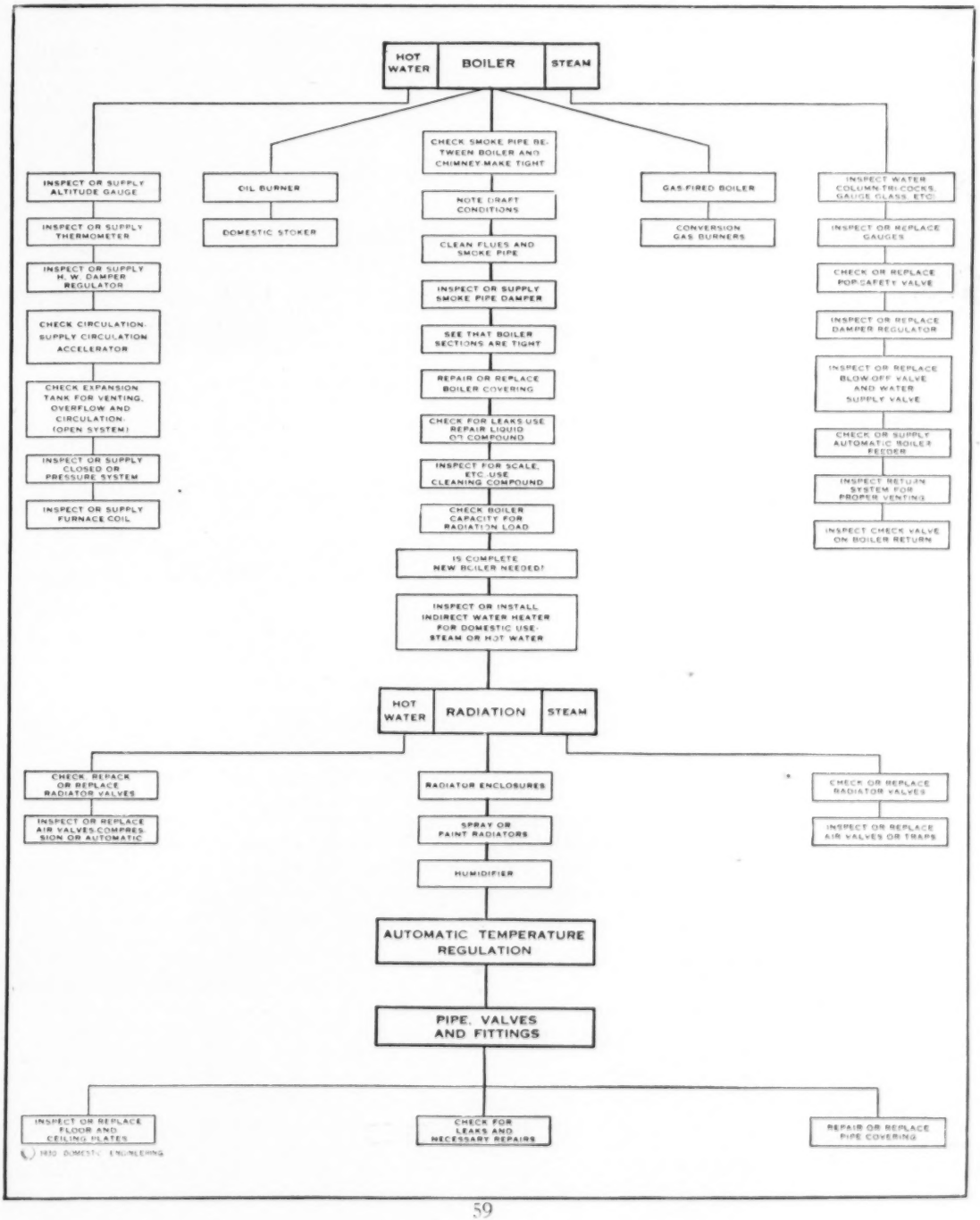
The Plumbing Chart

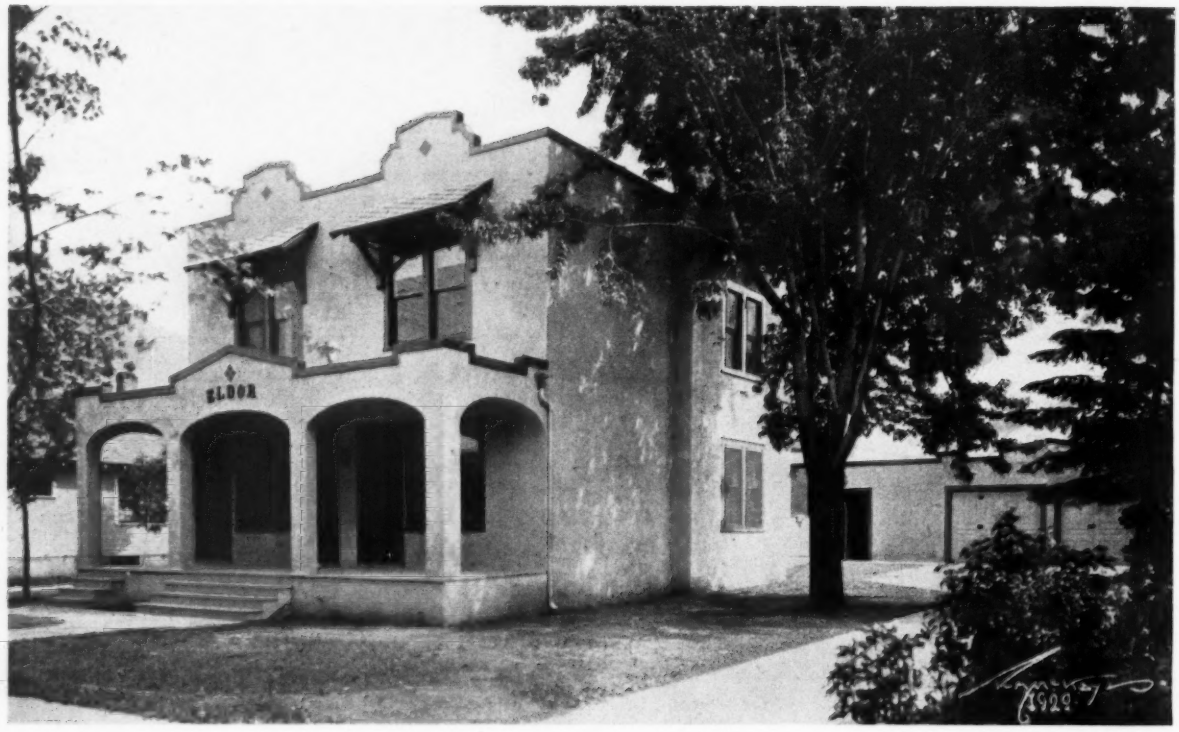
HERE are the two DOMESTIC ENGINEERING charts that are at work in the field, producing business. Thousands of copies of these charts are in use all over the country. It is the first time members of the industry have had placed in their hands anything so practical and yet simple. Using these charts as a guide to remodeling and replacement opportu-



nities in plumbing and heating, the alert contractor and his workers will miss nothing. Judging from the enthusiasm with which the charts are greeted, the whole field—manufacturer, wholesaler and contractor—recognized in them something vitally necessary and genuinely helpful.

The Heating Chart


HOT WATER
BOILER
STEAM
INSPECT OR SUPPLY ALTITUDE GAUGE
INSPECT OR SUPPLY THERMOMETER
INSPECT OR SUPPLY H. W. DAMPER REGULATOR
CHECK CIRCULATION: SUPPLY CIRCULATION ACCELERATOR
CHECK EXPANSION TANK FOR VENTING, OVERFLOW AND CIRCULATION: (OPEN SYSTEM)
INSPECT OR SUPPLY CLOSED OR PRESSURE SYSTEM
INSPECT OR SUPPLY FURNACE COIL
OIL BURNER
DOMESTIC STOKER
CHECK SMOKE PIPE BETWEEN BOILER AND CHIMNEY: MAKE TIGHT
NOTE DRAFT CONDITIONS
CLEAN FLUES AND SMOKE PIPE
INSPECT OR SUPPLY SMOKE PIPE DAMPER
SEE THAT BOILER SECTIONS ARE TIGHT
REPAIR OR REPLACE BOILER COVERING
CHECK FOR LEAKS: USE REPAIR LIQUID OR COMPOUND
INSPECT FOR SCALE, ETC: USE CLEANING COMPOUND
CHECK BOILER CAPACITY FOR RADIATION LOAD
IS COMPLETE NEW BOILER NEEDED?
INSPECT OR INSTALL INDIRECT WATER HEATER FOR DOMESTIC USE: STEAM OR HOT WATER
GAS-FIRED BOILER
CONVERSION GAS BURNERS
INSPECT WATER COLUMN, TRI-COCKS, GAUGE GLASS, ETC.
INSPECT OR REPLACE GAUGES
CHECK OR REPLACE POP SAFETY VALVE
INSPECT OR REPLACE DAMPER REGULATOR
INSPECT OR REPLACE BLOW-OFF VALVE AND WATER SUPPLY VALVE
CHECK OR SUPPLY AUTOMATIC BOILER FEEDER
INSPECT RETURN SYSTEM FOR PROPER VENTING
INSPECT CHECK VALVE ON BOILER RETURN
HOT WATER
RADIATION
STEAM
CHECK, REPACK OR REPLACE RADIATOR VALVES
INSPECT OR REPLACE AIR VALVES: COMPRESSION OR AUTOMATIC
RADIATOR ENCLOSURES
SPRAY OR PAINT RADIATORS
HUMIDIFIER
CHECK OR REPLACE RADIATOR VALVES
INSPECT OR REPLACE AIR VALVES OR TRAPS
AUTOMATIC TEMPERATURE REGULATION
PIPE, VALVES AND FITTINGS
INSPECT OR REPLACE FLOOR AND CEILING PLATES
CHECK FOR LEAKS AND NECESSARY REPAIRS
REPAIR OR REPLACE PIPE COVERING
1930 DOMESTIC ENGINEERING



This building, remodeled, is bringing a gross return of 24%

These Contractors — bought the building — remodeled it — rented it — and profited

IT IS said that some people have greatness thrust upon them, while others seek it out. With reference to remodeling, some contractors wait for remodeling jobs to come to them, and others not only seek them out, but create them.

The Service Plumbing & Heating Co., 135 E. Broadway, Missoula, Mont., belong in the latter class. They wanted to push home remodeling. They could, of course, merchandise the idea to Missoula. They went a step farther. In inviting the people of their city to modernize their homes, they decided that the best way to preach would be by example.

A letter from Carl C. Mott, who, with L. J. Lembke, owns and operates the Service Plumbing & Heating Co., says: "We bought and modernized this old house and threw it open upon completion to the public for inspection. At present we have it all rented at very attractive rentals. The bathrooms and kitchen sinks and laundry tray combinations are in different color enamelware and the painting of same is in accordance with a careful color scheme."

We reproduce a part of the full-page advertisement which the Service Plumbing & Heating Co., ran at the time this apartment building was thrown open to the public. Note the copy in which the community is invited to "Modernize Your Home" and the copy on the right which starts: "Eldor Apartments Good Example."

Here is selling by example, probably as strong a method as can be found. Figures on this apartment remodeling job are of the keenest interest as showing that modernization is an investment and not an expense.

The building was bought for $3,400. The modernization work ran to $10,000, of which the plumbing and heating took $2,800. As the building stood before the Service Plumbing & Heating Co. took it over, the apartments rented—when they did rent—for $25 a month. After remodeling, the apartments rented for $260. On the total investment of $13,400, therefore, the yearly rental of $3,120 represents a gross return of 24 percent which, when necessary deductions are made for repairs, taxes, etc., will leave a very nice net profit on the transaction.

Commenting on this remodeling job a full year after its completion, Mr. Mott has this to say:

"These apartments have been rented every day since their completion. They are very desirable and close to the downtown section of Missoula."

When the apartments were completed, as has been said, the firm took a full page in the daily paper to announce that fact. Aside from the

Modernize Your Home

There is no longer need to feel ashamed of the old home, present day methods of remodeling actually modernize any dwelling at a moderate cost. An additional bath or perhaps a shower is all that is necessary. If it's for a single fixture or a complete change of kitchen and bath fixtures we will be pleased to quote you.

Eldor Apartments

Good Example

Don't ever think any piece of property is too far gone to completely modernize — get your plans and the contractors will surprise you, not only on the results obtained, but the reasonable cost as well. If it's your home or a piece of property you wish to turn into an income producer, have it modernized. We will gladly show you through the Eldor where you will see what can be done to an old property.

copy that is shown, the page contained the photograph of the apartment building which is reproduced at the head of this article. It also carried a photograph of the beautiful salesroom, under which was this copy: "Interior of the Service Plumbing & Heating Company's store and salesroom at Missoula where every new and modern plumbing fixture may be seen. Largest stocks on display in town."

Below the photograph of the apartment building appeared the name and address of the building and the following: "These new apartments were built for the Service Plumbing & Heating Company expressly to demonstrate what home modernization can do. These ultra modern apartments replace a frame dwelling that had long since served its usefulness and was anything but an asset to its owners. These apartments are now for rent."

This point was also very carefully made: "All the fixtures in the Eldor were chosen from stocks regularly carried by us." This was done, of course, to forestall any feeling that, since the remodeling was done by the plumbing and heating firm, something special had been used in the way of fixtures.

It is interesting to find such a demonstration of the possibilities of remodeling, on the part of a plumbing and heating establishment—which is, at the same time, a paying investment. With figures such as these to submit to home owners and owners of rental property, the Service Plumbing & Heating Company is in a position to present definite proof of the value of modernization.

Remodeling of Larger Types of Buildings

Large buildings such as these need modern heating equipment for the sake of economy

Made work in 1930 for contractors skilled in that type of structure

Advances in heating equipment afford the contractor who has done the larger type of job in the past an opportunity to interest the owners of such property in the economy made possible by the newer engineering standards. At left is an institution to which additions have been built—making changes necessary in heating arrangements.

One contractor reports fuel savings to institutions and power plants, due to remodeled heating equipment. There is no limit to remodeling possibilities for every type of contractor.

Note the beautiful tiled background

Quality and Expert Installations Build Big Volume in Remodeling

"REMODELING work is nothnew to us," explained Louis Maier, of Maier Bros, Newark, N. J., who average $225,000 a year on such sales. "We have been modernizing old homes and commercial establishments for years because we found out long ago that this work was the most profitable. We do all the remodeling work for one of the big theater chains in this section as well as for hotels and other institutions. We accept no new contract work and advise all plumbers to stay away from unprofitable speculative construction."

Maier Bros. frequently get fifty calls a day regarding remodeling work. How come? Louis Maier says that there is no business that produces more word-of-mouth advertising than remodeling sales and that Maier Bros. have been modernizing satisfactorily for years, consequently, they are known all over the state and the good-will they have built up keeps them busy all the time. "One remodeling job will sell another," said this master. "If John Smith has a new bathroom installed his next door neighbors will want one, too, and if Bill Jones modernizes his cellar, you can depend upon it that Mrs. Jones will show it to all her friends and acquaintances so that they will also go in for basement beautification, which usually means the sale of a gas boiler, a gas water heater or an oil burner. Mrs. Jones' friends will ask Mrs. Jones who remodeled her bathroom so beautifully and Mrs. Jones will recommend the plumber who did the job and such recommendations mean additional remodeling sales." Maier Bros. have traveled as far as seventy or eighty miles away to do remodeling work for a home owner who was recommended by a satisfied customer.

How to Handle Remodeling

Louis Maier offers three good suggestions regarding sales of remodeling jobs. First: Buy only the best fixtures and materials for this work, otherwise you are sure to have trouble. Remodeling customers are usually quality customers. Secondly: Charge prices that assure you an ample profit. If a prospect hedges about paying a fair price, pass up the sale. If a home owner comes into Maier Bros. and demurrs at the price or wants sub-standard materials on a remodeling job, they tell him to go elsewhere. They will not handle the work. Thirdly: Employ only expert workmen. The average journeyman may be able to install fixtures in a house built on speculation, but that does not say that he can do a good remodeling job. Maier Bros.' journeymen are better-than-the-average workmen. It takes an expert craftsman to handle modernization work, explained Louis Maier, so when you get a good man, hold on to him.

Maier Bros.' show window is displayed in one of the accompanying photographs. This store is located right in the heart of a busy Eastern

city and there are thousands of people passing this store every day. You will notice that this window display is conservative in tone and distinctive in appearance. It is the institutional type.

Summer Business

This organization is usually a month or more behind on remodeling orders. Maier Bros. have no slumps and work right through the Christmas holidays. In the summer months they do remodeling work while their customers are away on vacations, which is an excellent time to modernize, because there are no housewives and maids around to interfere with the journeymen. Maier Bros. installed a dozen gas-fired boilers in old homes last summer and a few gas furnaces in warm-air systems. Louis Maier is considered one of the best heating engineers in the state. In the old days he installed many warm-air furnaces, but these heating systems are not so popular in this territory any longer, consequently, comparatively few new installations are being made, nevertheless, Maier Bros. are modernizing the old ones with gas furnaces, fans, filtration units, humidifiers, new registers, console cabinets and other warm-air accessories. No kind of modernization work gets away from Maier Bros. as long as it is connected with plumbing and heating and if the customer is willing to buy the best and pay the price.

Nothing but stoves sold in this section

Maier Bros. have been in business for thirty years. John, Louis and Fred Maier comprise the company. The store interior photograph shown herewith is the gas range department which is the next store. This business is conducted in co-operation with Ira Rich and is run under the name of Maier-Rich & Co. This is one of the leading gas range salesrooms in the state. Maier-Rich & Co. sell more ranges than most of the department stores and gas company stores in the state.

Hotels, Apartment Buildings and Institutions

This hotel replaced its old-fashioned plumbing—a big remodeling job

All find it necessary to keep plumbing up to date as a matter of good business

Remodeling is not confined to residential work. All over the country there have been going on renovation jobs in industrial plants, commercial buildings, hotels, institutions, etc. The illustration at the left is of a famous hotel in which the passage of years made necessary a complete plumbing renovation. Small hotels and large ones, apartment houses that have been losing tenants, and business property being brought up to date, have all made work for contractors accustomed to such operations. It is work which can be promoted on the basis of increased value and income, due to plumbing of up-to-date design and quality.

Original cost	$4200.00
Carpenter work (labor)	1496.00
Common labor	337.00
Cement work, basement driveway, walks	652.00
Plumbing and heating	**2089.35**
Millwork	1062.80
Lumber	815.77
Brick work	375.00
Tin work	52.00
Cabinets	339.07
Electric Refrigeration	553.00
Excavating	159.00
Paint	397.00
Plaster	295.00
Electric Wiring and Fixtures	476.00
Hardware	100 00
Screens and Doors	99.35
Landscaping and Sodding	350.00
Curtains, Linoleum, etc.	100.00
	$13,948.34

Study the figures shown here. They are authenticated and cover a remodeling job in Springfield, Ill. Note that plumbing and heating secured the largest single sum of money. The only other workers who usually exceed plumbing and heating are the carpenters. It shows that the plumbing and heating contractor ought to be interested in remodeling projects, no matter who may be promoting them. They offer him a larger profit opportunity than the other trades, with the occasional exception of the carpenters.

Sales Conversations

A feature of this section which will help the man who wants to improve his personal selling

"MATERIAL such as you are publishing in your 'Plumbing and Heating Merchandising' section is good sales help," says a sales executive in our field. "What I am wondering," he went on, "is whether all of your readers realize that some of the information you are giving them can be used effectively in actual selling."

He went on to call attention to the story carried in our issue of November 29. This story covered the remodeling of an old building in Springfield, Ill. When the job was done, and the original cost and the remodeling cost had been added together, it was found that the building would produce a 14 percent return on the investment. "It just happened," he said, "that I was talking to a friend of mine who owned a piece of property of about the same type and I found him tremendously interested in the figures. His desire to know more about the job showed me that, if I had been trying to sell him the idea of remodeling that old place he owned, all I'd have needed would be the figures on several such jobs."

We think it worthwhile, therefore, to summarize the figures on this job for contractors who may find them of use in talking remodeling with owners of rental property.

This house cost the owner $4,200 when he bought it. He spent, roughly, $9,700 to remodel it, as indicated by the figures given above. Before the remodeling the house was offered for a rental of $35 a month, but there were no takers. After taking care of the remodeling the total investment in the property was $13,948.34. The house was made over into three apartment: a one-room, a two-room and a five-room apartment. Long term leases have been taken for $45, $55 and $65 a month respectively. Thus the total rental will be $1,980 a year, a gross return of slightly better than 14 percent.

No property owner can disregard such figures as these. And the contractor who is using them ought to feel an additional interest when he studies the various costs entering into a remodeling job, which show him that his own share of the total cost is a generous one.

"On January 1, 1931, the manufacturers of the raised rear vent water closet will discontinue furnishing bowls with seat vents as staple fixtures."

Letters from readers Express a variety of Opinion on the

Raised Rear Vent

A raised rear vent water closet installed. Note that the vent is above the rim of the bowl. Although this pictures an installation in a residence, as pointed out in this article, the greatest opportunity for raised rear vent water closets is in school and other public jobs

TO what extent is the plumbing contractor interested in the raised rear vent water closet? This question was prompted in March of this year as a result of action, taken by the Bureau of Standards, in the form of a notification sent out to users, distributors and manufacturers of raised rear vent water closets announcing that an agreement had been reached whereby such fixtures would not be manufactured and listed as standard equipment after December 31, 1930.

It was found that the contractors are interested to the extent that fifty-four wrote to tell us of their experiences and whether or not such fixtures should be removed from the list of standard equipment.

Twenty-one of the fifty-four contractors definitely stated that personally they are in favor of retaining the raised rear vent water closet on the standard list. Nineteen believe that it has no place in a plumbing system. Seven have had no experience with them and consequently have no opinion to offer, while five hold that their installation should be conditional depending upon whether or not other adequate means of ventilation are provided. The opinions of the remaining two are that it is immaterial whether or not they are retained on the list.

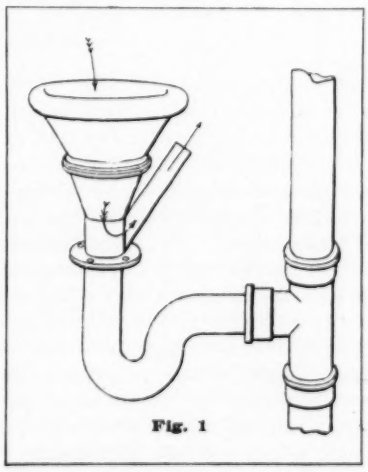


Fig. 1

Combining those who think that they should be retained with those who say its use should be conditional results in a total of twenty-six of the fifty-four, or 48 per cent, who see a place for the raised rear vent water closet in plumbing systems. This may be contrasted with the nineteen, or 34 per cent, who do not believe it performs satisfactorily its function.

Twenty per cent of those who replied, or eleven contractors, have installed during the past year a total of 526 raised rear vent water closets. The tabulation breaks up this figure and is interesting as an indication of the distribution of these fixtures. It will be noted that by far the majority of the installations have been made in schools. One contractor in Florida said that although he has not made any such installations during the past year, over a period of ten years his raised rear vent type installations amounted to 1 per cent of his total number of water closet installations. Another said that he had installed 97 in 1928 and 40 in 1929.

As for the general distribution of interest in this subject, opinions were received from twenty-two states. The largest number, seven, came from Mas-

sachusetts, with Ohio second, and Indiana and Illinois third. Other states were Michigan, Wisconsin, Arkansas, Maine, Florida, Iowa, New Jersey, California, Virginia, Texas, New Hampshire, Louisiana, Montana, New York, Georgia, Vermont, Pennsylvania and North Carolina.

Before giving the individual comments of the contractors who wrote us, the closet itself should be considered.

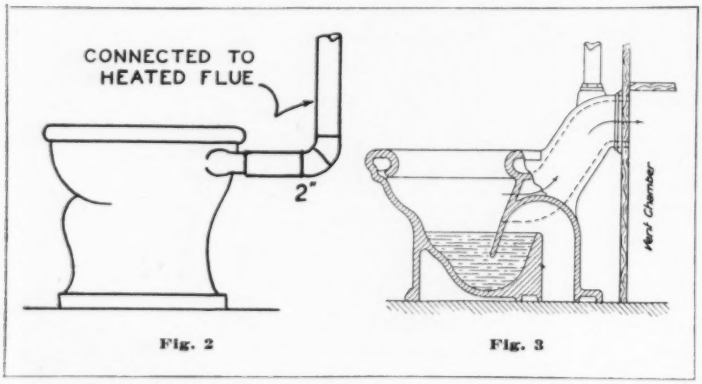


Fig. 2 Fig. 3

The raised rear vent provides a means for conducting the odors arising from the use of the water closet bowl into foul air ducts before such odors have an opportunity to pass out of the fixture and become diffused in the atmosphere of the room.

At a recent meeting of our state directors, the local vent was discussed. It was the consensus that the discontinuance of the local vent is a grave mistake.

L. DeWitt Goulden,
Secretary,
Master Plumbers' Association of Connecticut.
Stamford, Conn.

Early Attempts to Ventilate Bowls

The first early attempt at ventilation of this kind was made in the city of Worcester, Mass., when the antiquated fixture shown in Fig. 1 was developed.

This first effort was followed later on in the development of the water closet bowl, by the introduction of the local vent, as shown in Fig. 2. This was applied first, we believe, to the washout water closet, and later to other types, including the present types of siphon water closets.

The local vented water closet bowl as shown in Fig. 2, was provided with a horn which was a part of the pottery itself, located either on the right or left hand, and above the water line. This vent horn opened into the bowl, and to it was attached a 2-in. local vent pipe of sheet metal, which was supposed to connect into a heated flue.

When properly connected, so that a draft of sufficient strength was created to enable such a small pipe to become effective, this method of ventilation was successful in a more or less limited way.

We do not think this type of local vented water closet bowl ever came into extensive use, except in certain limited sections of the country, and it is a question whether it really deserved any greater success than it has seemed to have. Certainly it was subject to misuse and had its limitations.

Old Style Vent Needs Improvement

This local vent method of ventilation was often used under entirely unfavorable conditions, where there was absolutely no draft whereby a circulation could be created. In residence work, where it was very generally used, flues were heated only during a part of the year. Often the local vent was run directly through the roof. Moreover, the vent openings often became fouled, and there was also leakage around the connection of the vent to the vent horn. Altogether there was great opportunity for improvement in the old-style 2-in. local vented water closet. The improvement came in the shape of the raised rear vent.

The common local vented closet bowl is very generally condemned, and it has been wondered by some if the raised rear vent type has not too readily been included in the same discredited class.

Figs. 3, 4 and 5 show the raised rear vent applied to three types of water closet bowls. It will be seen that this vent opening is located at the rear of the bowls, and is a part of the bowl. The bottom of the opening of the vent is higher than the top of the closet bowl, so that overflow into the vent pipe is impossible, as in the case of the small side vent horn. It is possible also to arrange for the flushing of the vent each time the water closet operates. The raised rear vent generally is oval in shape, something like 5¾ in. by 2¾ in.

All that is needed to produce efficient results with this type of ventilation, is some effective method of maintaining an upward movement of air in the ventilating duct to which the closet bowl vent connects. This then removes the odors from the closet immediately. Furthermore, when the closet is not in use, the vent will even ventilate the room to the extent of its ability to handle air volume.

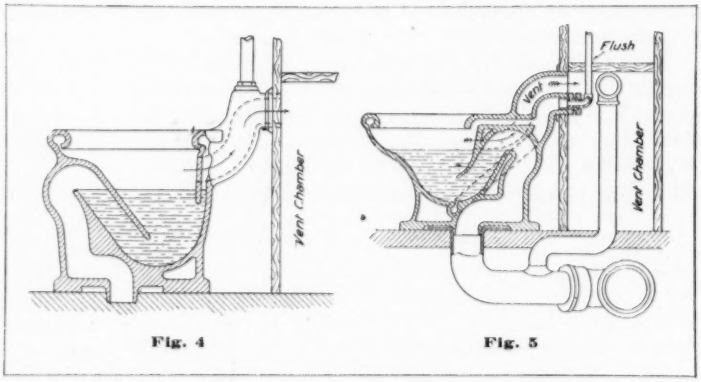


Fig. 4 Fig. 5

Unlike any other form of toilet room ventilation, in the use of raised rear vents the fixtures themselves provide means of ventilation, and perform this service by taking the odors away before they have a chance to get out into the room.

Other Systems of Ventilation

Under other systems, the odors must pass out of the fixtures, and to get to the inlets to the foul air ducts the odors must pass through the atmosphere of the toilet room.

There are numerous methods of producing strong ventilation. Fig. 6 shows one of these. Here the water closets of a residence are ventilated. Note that the electric fan located in the attic space provides the positive upward current of air in the duct work. With an installation such as this, possibilities of down draft are eliminated and one objection which has been advanced against the raised rear vent water closet as an effective means of ventilation is overcome. While possible, however, to use the raised rear vent water closet in dwellings, it does not seem that this is its important application. In fact, the question has been

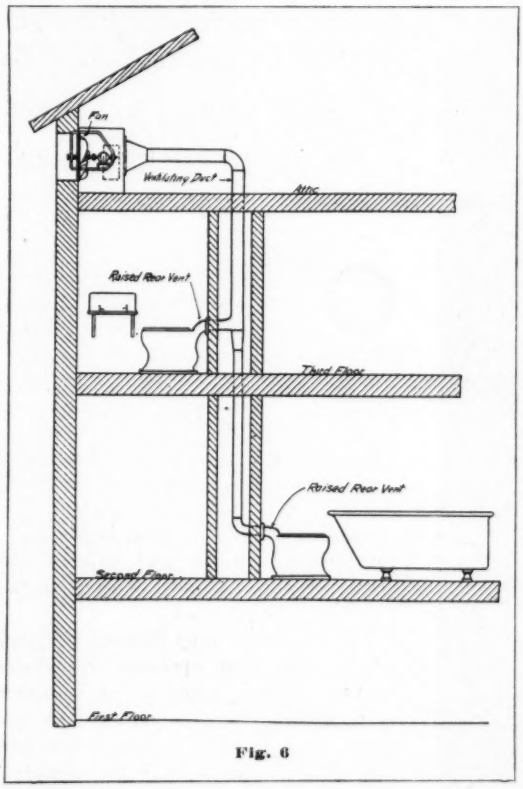


Fig. 6

raised as to whether it is advisable to advocate its use for any other than public toilet rooms. The reason is that in order to accomplish correct results, the proper equipment must be available, which generally is not to be found in the average dwelling.

It is therefore in schoolhouse toilet rooms, and toilet rooms for hotels, clubs, railroad stations, public buildings, etc., that we see the great opportunity for the use of the raised rear vent system of ventilation. In this class of work there would generally be available the proper means for operating such a ventilating system. The use of this method does not seem advisable under other conditions.

However, for public toilet rooms, the method of raised rear vent ventilation is advocated.

In Fig. 7 will be seen a system of such ventilation for factory toilet rooms.

In Fig. 8 is shown the floor plan of the plumbing fixtures in the men's toilet room in the South Station in Boston. Here not only are the water closets of this type, but the urinals are of a type that carries the odors into the foul air ducts without diffusing them into the atmosphere of the room.

What Contractors Think

The comments received are particularly interesting in that they reflect the experience of the individual contractors. For instance, one from Ohio states, "I am greatly surprised that the elimination of the raised rear vented closet bowl should even be considered.

"I have advocated the use of this type of fixture, particularly in the better class of residences, for 35 years and have always contended that if we did more local venting and omitted some of the unnecessary back venting we would have better plumbing installations.

"Very true, it is sometimes difficult to make a

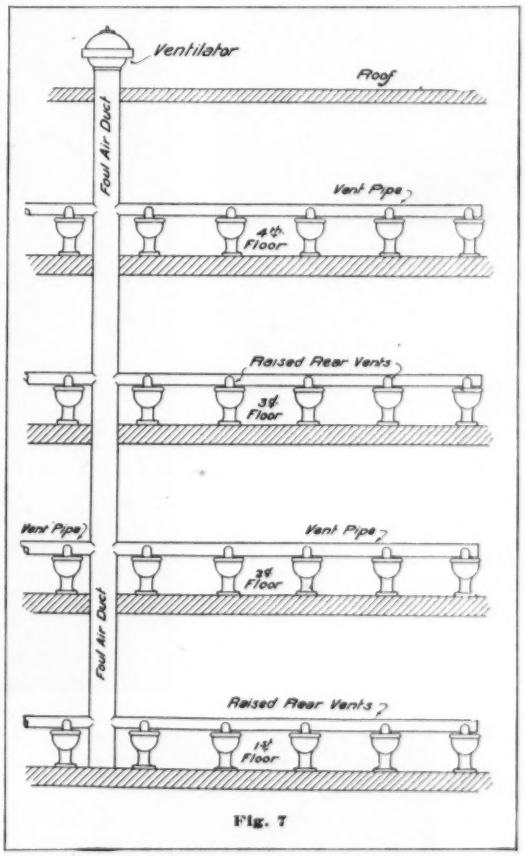


Fig. 7

really effective installation, due to the hot chimney flues being too far distant from the fixture. I contend, however, that we should connect those that are near enough, and put a motor driven fan operated with an automatic electric switch on others.

"I have installed only nine local vented bowls in

(Continued on Page 123)

Entire Town Central

Step-by-step pictorial article tells how contractor installed a total of nineteen hundred feet of central heating steam mains. Electric arc welding used

Fig. 1—At the beginning of the work hard rock was encountered in digging several sections of the trench, but air drills and dynamite made short work of the removal. This work is shown above

Fig. 3—The lower half of the conduit installed. The rollers provide supports for the steam mains

Fig. 2 — Carrying the trench to fine grade. Note the neat section excavated and the spreaders used to prevent cave-ins

ON U. S. Route No. 30, better known as the Lincoln Highway, and thirty-five miles west of Philadelphia, lies the city of Coatesville, Pennsylvania, population about twenty thousand. This small industrial community enjoys all the comforts and luxuries that are afforded by great utility companies to the residents of the largest cities. Even that most needed of all utilitarian necessities, heat, is supplied to the business quarter and adjacent residential sections in the form of steam from a district heating plant.

The Chester Valley Electric Company, which owns and operates this district heating system, supplies its consumers with steam from September 15 until about June 1. The customer purchases this steam on the basis of the number of thousands of pounds used per month, being determined by the use of a condensate meter. It was necessary last summer to add eight hundred and fifty feet of 10-in. and thirteen hundred feet of 6-in. main to its existing system to satisfy public demand.

A Cleveland, Ohio, contracting firm was awarded this work. They executed the entire project, including all necessary trenching and back-filling, erection of all piping and the installation of conduit and insulation. The necessary services to customers from the main line to the consumer's heating system were also installed by this firm. These service lines were

Heated By Plant

Existing warm air installations changed to blast heating systems by the application of steam unit heaters to the original duct-work

By E. R. BENEDICT

erected to the same general specifications as the main lines.

Conduit System

After the trench was excavated to fine grade, as is very clearly shown in Fig. 2, the base drain support sections of the conduit system were put in place. These support sections are hollow foundation blocks of first grade vitrified salt glazed tile which support the conduit along two lines of contact for the entire length of the conduit system. The hollow portion of this block acts as the drainage area for the conduit system, and at suitable low points this area was connected to a sewer so that any water which may seep in around the conduit system will be conducted away, assuring the owners of not having a wet system with the resulting rapid deterioration and loss of thermal efficiency of the insulating material.

On the foundation sections were placed the bottom halves of the conduit proper. This conduit is also of first grade vitrified salt glazed tile which had been properly scored so that splitting was easy. The manufacturer of this conduit had marked the top and botom halves with numbers which were burned in at the factory so that it was very easy to identify each bottom half's top mate when it came time to apply the top half, and a fine tight fit was assured; all the bottom joints were sealed shut with cement mortar.

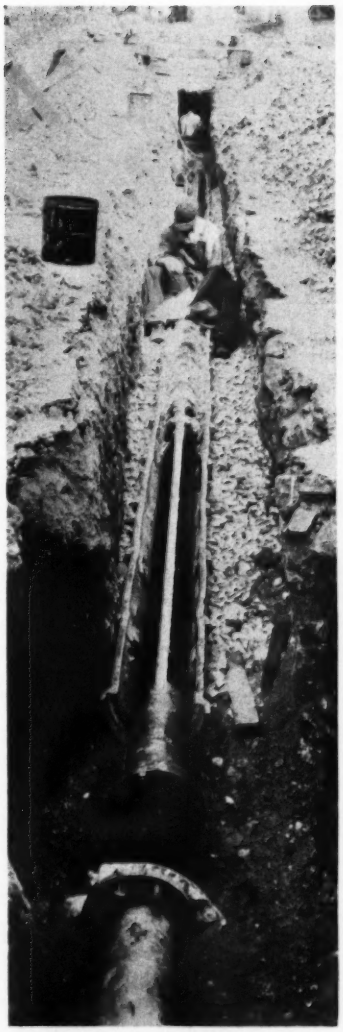


Fig. 4—After the pipe had been installed and tested, it was given a thorough coat of paint. The underside of the pipe was reached by revolving it

Fig. 5 — Insulation packed around the pipe before top section of conduit was placed. At the bottom of the view, just above the spreaders, can be seen the branch connection taken off of the top of the main

(See next page)

Fig. 6—The completed installation partially filled around the conduit and ready for back-filling

At intervals of 12 ft. rustproof pipe supports of the roller type were installed to support the pipe. These supports are so designed that they do not rest upon the bottom of the conduit, but project through holes in the bottom of the conduit and firmly interlock onto the support base drain sections. After the supports are in place the holes are securely cemented shut so no water can enter the conduit. Fig. 3 illustrates the base drain, bottom halves of conduit and pipe supports in place.

Electric Welding Used

The pipe was placed on the supporting rollers and the joints welded together by the metallic arc electric process. The pipe was secured in random lengths with the ends beveled sixty degrees with the horizontal axis of the pipe to facilitate the welding operation. After each section of pipe between anchors and expansion devices had been welded, the ends were blanked off and the section was filled with air to one hundred fifty pounds pressure. With the pressure at the maximum each weld was subjected to the well known soap suds test for leakage. Also, while the full air pressure was on the pipe the shock test was applied to each weld by striking the pipe on each side of every weld with a three pound machinist hammer as hard as a man could strike without indenting or distorting the pipe.

At intervals of 60 ft. anchors and expansion devices were alternately installed. These expansion joints compensate for the expansion which takes place with a rise in temperature in the pipe. The pipe was attached to these fittings by means of standard one hundred twenty-five pounds screwed flanges which had been attached to special threaded sections of pipe.

After the pipe had been tested it was given a thorough coat of rust-proof paint. The bottom of the pipe was reached by revolving an entire section which as is shown in Fig. 4 can be done readily. The worker in this picture is seen to be beginning to apply the insulation, which is of long fibre asbestos treated to be moisture resisting. This loose insulation is packed around the pipe between the walls of the conduit. This is admirably shown in Fig. 5, as is also an anchor fitting and service outlet in the foreground.

With the insulation in place in the bottom halves of the conduit, the top halves are applied and more insulation inserted until it has been packed to the specified density. The expansion devices and anchors after being protected with a brick box were insulated in the same manner as the pipe. Fig. 6 shows a completed section of the conduit ready to be back-filled.

At proper intervals valves were inserted in these lines to facilitate the operation of the system. The valves were protected by hard burned brick manholes. Condensation is removed from the lines at the low points by means of float traps.

Hard rock was encountered in several sections of the trench, but air drills and dynamite soon made short work of this removal. Drilling operations on this rock are shown in Fig. 1.

This district heating system is operated on live and exhaust steam at a pressure which seldom exceeds twenty-five pounds per sq. in. and normally runs at between five and ten pounds per sq. in.

The Chester Valley Electric Company was one of the first utility companies to apply the unit heater principle to residence heating. They have installed a unit heater in a house which was piped for warm air heating. The outlet from the unit heater was inserted in the outer jacket of the hot air furnace and the heated air is distributed throughout the house through the existing pipes. Thermostatic control of the steam supply valve and fan motor assure any desired temperature in the home. This installation operates very quietly and the residents of the house report that the heating service is extremely satisfactory.

◆

Furnishing Water to Contractors

IN a discussion in the Superintendents' Round Table at the St. Louis convention of the American Water Works Association, C. W. Winkle, superintendent of maintenance and transportation, Indianapolis Water Co., stated that his company furnishes water to contractors from fire hydrants, but it is under the supervision of one of their employees. A 2-in. valve connection is put on one of the nozzles of the hydrant, the hydrant opened up full and then the contractor operates the hydrant from the 2-in. valve, which is reduced down, in most cases, to about a 2-in. opening and the water company man looks after this contracting work and closes and opens them at nights and mornings. The fire department is notified where these hydrants are equipped with the contractor's connection. If it is on a street that has been blocked off for several squares the company does not close it up each night and open each morning until the contractor gets through. The fire department is prepared for the contractor should they have to get into the street. They understand that when they get to this hydrant with the 2-in. valve connection on the 2½-in. nozzle they first have to close the hydrant before they can make connections thereto. Very good results have been had in this way of handling contractors.

◆

Connecting Water Closets at Different Levels

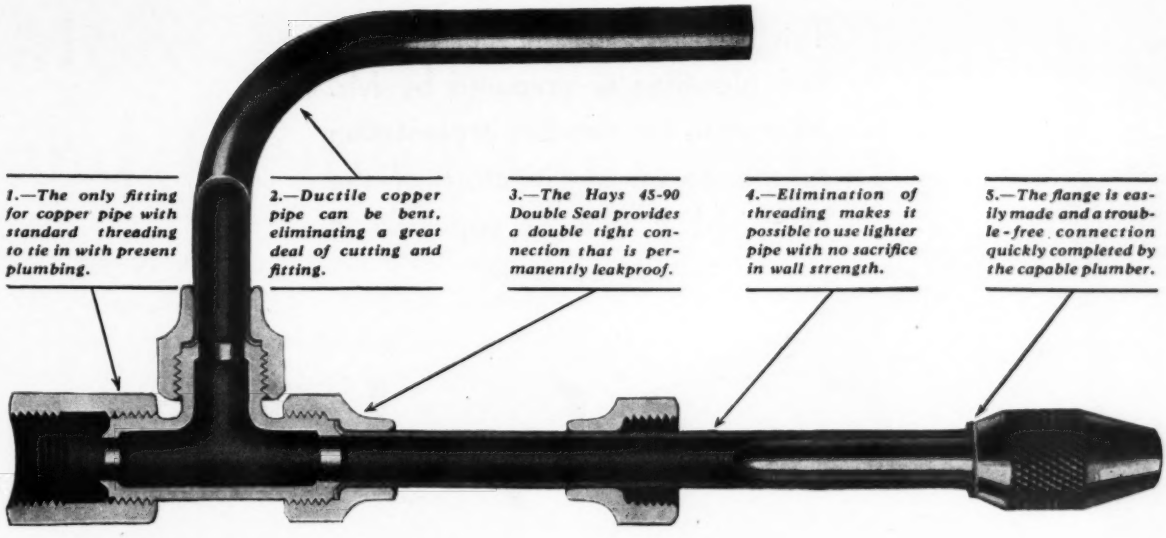
To the Editor:

I have just finished reading your article "When to Connect Water Closets at Different Levels."

The enclosed photograph, which I took at Sierra Blanco, Texas, shows water closets at different levels (no vents). It is the toilet for the largest two story hotel in town.

I do considerable traveling and have seen plenty of one story but when a plumber sees a two story affair, well that's interesting enough to take a photograph of.

(Signed) Fred C. Arnold,
Grants Pass, Ore.


1.—The only fitting for copper pipe with standard threading to tie in with present plumbing.
2.—Ductile copper pipe can be bent, eliminating a great deal of cutting and fitting.
3.—The Hays 45-90 Double Seal provides a double tight connection that is permanently leakproof.
4.—Elimination of threading makes it possible to use lighter pipe with no sacrifice in wall strength.
5.—The flange is easily made and a trouble-free connection quickly completed by the capable plumber.

THE HAYS COPPER PLUMBING METHOD

COPPER PLUMBING—The use of pure copper pipe for plumbing is growing rapidly since the introduction of a practical method of installation which makes its cost little more, often less, than the cost of older systems; while the result is permanent troubleproof piping.

This system, installed in a workmanlike manner means an uninterrupted flow of clear, clean water for the life of the building. The greatest mechanical factor in bringing about this important improvement in plumbing systems has been the Hays Double Seal Connection.

THE HAYS DOUBLE SEAL CONNECTION—This connection provides a double contact between the flanged copper pipe and the connection by means of a 45-degree angle and a 90-degree angle in the seat.

This design insures ample tightness and strength to make a permanently leakproof joint. The flanged pipe is locked easily and securely between the two parts of the connection by tightening the nut.

The 45-degree angle holds the pipe in a wedge, making a seal that is absolutely tight. The 90-degree angle is the shock absorber. It locks the pipe, provides a second seal of positive tightness and protects the first seal by absorbing pulling strains and vibrations.

Hays Double Seal Connections are accurately machined to match the bore of the copper pipe used, permitting the same full flow of water. Each connection is tested under a hydraulic pressure of 200 pounds to the square inch. This precaution insures long life and eliminates leaks or breakdown in service.

HAYS COPPER PLUMBING METHOD—This is the name given to copper pipe plumbing installed with Hays Fittings.

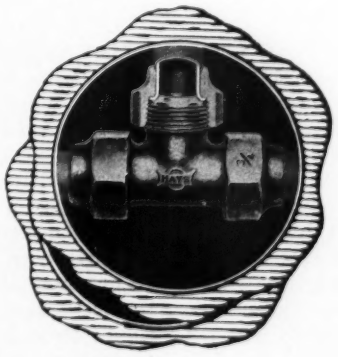
No special plans are needed. The installation, as far as the position in the building is concerned, is practically the same as that of any other system.

Copper pipe, being ductile, can be led around obstructions; bends at corners unless very abrupt, cross-overs, etc., can be made without the use of elbows. No threading—no gaskets—no white lead.

The only tools needed are hacksaw, file, wrench, hammer, and flanging tool.

ADVANTAGES OF THIS SYSTEM—This piping system, properly installed, is permanently trouble-free and will cause no interruption of the flow of water during the life of the building. Copper pipe will not rust, or corrode, the inside walls remain smooth and the water is never discolored nor its force diminished due to deterioration of the piping system. There will be no built-up obstacles to block the water at some points and develop noise.

If water freezes in copper pipes, they do not burst or crack. Expansion and contraction take place without damage, unless too frequently repeated.



REMODELING AND REPAIR WORK—The Hays Copper Plumbing Method may be used for the replacement of worn out piping, and here, in addition to its other advantages, it eliminates most of the tearing up of floors and cutting into walls which is often necessary where rigid pipe is used.

Hays Double Seal Connections are the only fittings for copper pipe with standard threading which will tie in with present plumbing.

FITTINGS—Hays manufactures a complete line of Double Seal Connections, Tees, Elbows, Couplings, etc., to meet every requirement in the installation of copper pipe.

Every progressive plumber should thoroughly understand this modern method of plumbing. More detailed information will be found in the booklet, "The Hays Copper Plumbing Method." Send for your copy if you do not have it.

HAYS MANUFACTURING CO.
Erie, Pa.

HAYS DOUBLE SEAL CONNECTIONS

This is a study of the idea of certified plumbing as prepared by Mr. Merryman for detailed presentation to the board of directors of the N. A. M. P. Part 1 appeared in our last issue

Certify It!

By
T. W.
MERRYMAN

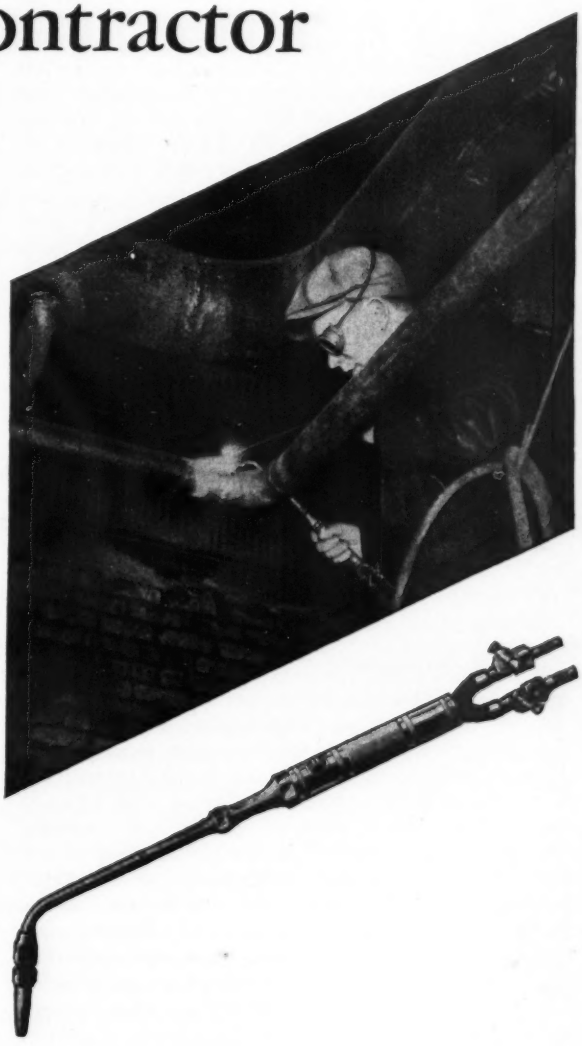
THE public today, according to recent surveys, prefers products of luxury, ostentation, pleasure, seductive appeal in preference to staple necessities. In order to purchase those products high in elective desire, the public consciously or otherwise, endures with patience the need for products low in desire.

To secure silk hose, the housewife willingly goes without many of the plumbing items which need replacement in her home. Women actually spend nearly four times as much for silk hosiery in a single year as for plumbing replacements. The automobile takes $4,000,000,000 from the public purse and the operation and maintenance of the motor car, in addition to the initial investment, uses another $12,000,000,000. Nearly 30 per cent of our spendable American income is demanded by this one pleasure alone. Radios take nearly another billion dollars, cosmetics another half-billion dollars. The movies take another half-billion dollars, and when these luxuries get through dipping into the small amount that is left of the national income, after the three prime necessities of food, clothing and shelter have been taken care of, there is a wild scramble for the little that remains, by a number of industries whose products are low in elective desire.

It has been authoritatively estimated that nearly 70 per cent of the plumbing in all American homes is obsolescent, and inefficient. If the public continues to look with indifference upon the plumbing tradesmen, and if our products continue low in elective desire, which is conclusively proven by various surveys, the industry can be expected to grow more virulent each year. Obviously, with all of this highly organized competitive battle raging over the entire

More Profits for the Plumbing and Heating Contractor

The trend toward modern oxwelded design is a distinct advantage and a real opportunity for the Plumbing and Heating Contractor equipped to do oxwelding.



PREST-O-WELD welding and cutting outfits offer you the kind of equipment that will meet the requirements of the most exacting oxwelding specifications.

Your jobs require the making of bends, making of fittings, cutting of pipe into suitable lengths, welding of pipe into sections, and the use of tie-in joints . . . all of which are efficiently produced with a Prest-O-Weld outfit. The saving in materials, pipe, fittings and time means added profits to you.

AND . . . you can easily afford to be up to date with Prest-O-Weld equipment...It is moderately priced.

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DE-12-27-30

Name.....

Company.....*Position*.....

Street Address.....

City.....*State*.....

business terrain, our products are not going to be sought. However, if the average home is approached before it has exhausted its funds on other products which it seeks voluntarily, it can be influenced by proper sales appeal and merchandising strategy to buy. This calls for a merchandising mind in the master plumber. Heretofore, however, he has been interested only in materials and mechanics. He has built his entire business upon the assumption that the public will come to him. He is not trained, schooled, or in sympathy with modern merchandising. For this reason, now that the public has stopped buying and must be sold, he stands bewildered, and the plumbing industry is not getting even a small fraction of the replacement business it could gain if the average master plumber was alert to the merchandising possibilities in the community he serves.

"The biggest single thing Certified Plumbing would accomplish would be to permit control of all the causes creating the many problems within the industry. The public would be able to identify both materials and workmanship. This ability would free it of all doubts and the installation sign of the Certified Plumber would, without doubt, add to the salability of property."

—T. W. MERRYMAN

The Predicament of the Manufacturers

A part of the condition which now faces the plumbing industry has been produced by the past sales policies of the manufacturers in former years which are now returning as a boomerang to confront them with added distributive problems. Geared up to produce much more than the public can consume, plumbing manufacturers offered distributive representation to all plumbers, irrespective of character, finances, or ability. When the tide turned, and it became apparent that it cost more to keep the mass of these representatives, than the profit manufacturers derived, certain manufacturers began to think in terms of a selective distribution. They offered unusual sales co-operation to the group of master plumbers which they knew could be relied upon properly to represent them. The aim, through such selective distribution, was to bring control out of chaos, and to remedy the problems of the industry. While this attitude on the part of these manufacturers is appreciated by well financed plumbers, I do not consider such efforts economically sound or to the best interest of all concerned. It is obviously impossible for all manufacturers to be exclusively represented, nor is it necessary in order to assure the public of higher plumbing standards.

The Fear of the Average Plumber

The average plumber, as the result of all these conditions, is stampeded by fears of various types. He fears his creditors will close in on him. He fears he will not be able to secure sufficient work to keep him busy for the season. He fears to lose what he unintelligently calls a "customer," even though to hold this customer, often he must do his work at a loss. He fears the inside track of some competitor with some architect for whom he has done considerable work. These, and many other fears, haunt him during the day and as he tries to sleep. Every meeting of our association echoes these fears, problems, difficulties, penalties and these hazards.

Lack of Control

There exists, within the plumbing industry, an earnest, capable, enterprising class of master plumbers, who desire to remain in business, and feel pride and joy in the prestige which the plumbing profession should have. They have attempted, through associated activity and through their own enterprise, to establish some control by which the problems of the industry could be solved.

A tremendous amount of argument, persuasion, mutual agreement, and associated discussions have failed to remedy the situation or to relieve the hazards of our industry. The one dominant predicament of the entire industry is lack of control. The established class of plumbing contractors can not control installations, and will have less control in the future, unless a remedy possessing definite concerted action, benefits and protection can be created.

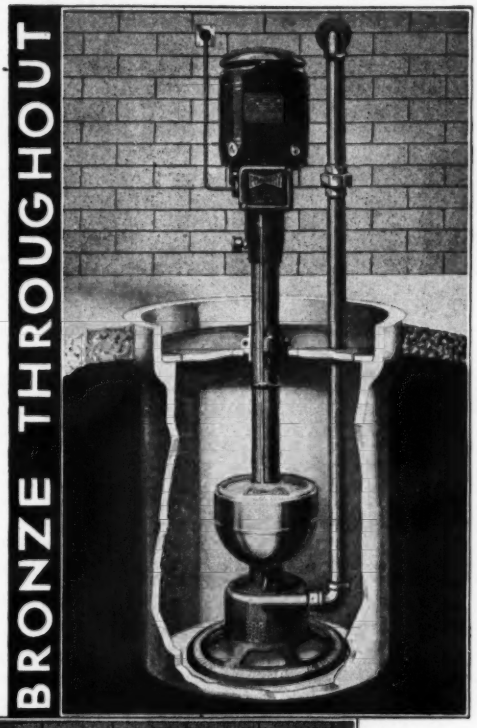
It is axiomatic that this control can not be created or developed by individual initiative. It would be like an individual attempt to control or repeal some national law. No matter how optimistic and earnest one becomes, he can not through his individual efforts set himself apart from the mass, it would require an investment out of all proportion to the benefits that he would receive. It requires the concerted action of the established class and there can not be any concert of agreement unless some plan is created in which the plumbing contractor can easily see that he will benefit individually.

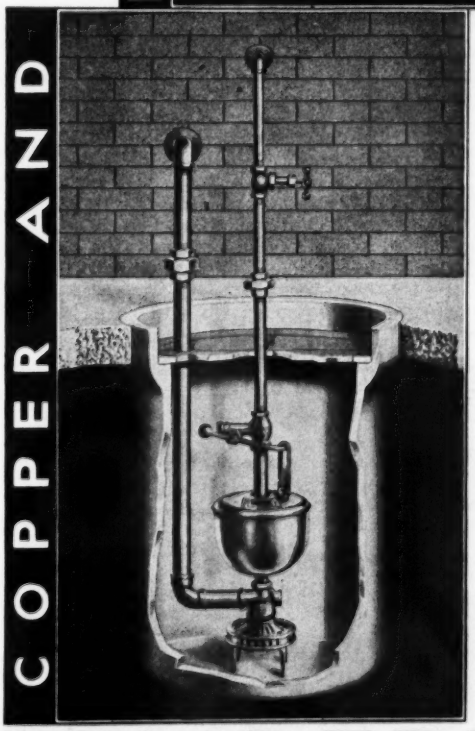
Certified Plumbing

Everyone realizes that a single strand of wire is not capable of bearing a heavy load, but when a thousand such strands are brought together in a cohesive whole, they produce a cable of strength sufficient to carry the heavy load which the individual strand could not bear. The full force of the old adage "In union there is strength" is not as fully realized at the present time as it might be.

It is true that plumbing contractors have combined into associations, local and national, to gain some

A few reasons why— Plumbing Contractors install..





TRADE PENBERTHY PRODUCTS MARK

TO dispose of seepage below sewer level—or where sewerage facilities are not available—many plumbing contractors prefer one of the units illustrated here. Local conditions determine whether the electric or hydraulic unit will be most economical—but both pumps have many characteristics that appeal to the plumbing contractor.

Both the Penberthy Automatic Electric Sump Pump and the Penberthy Automatic Hydraulic Cellar Drainer are immune to corrosion—they are copper and bronze throughout. Both are thoroughly dependable under the most severe operating conditions, and are economical of electricity and water power. They are fool-proof, require no kid-glove handling, and are easy to install—when properly installed there is no servicing to consume time and reduce profits.

Manufacturing a complete line of both electric and hydraulic units in a full range of types and sizes, the Penberthy organization is especially well qualified to recommend the correct equipment for any specific case. Leading jobbers throughout the country stock both electric and hydraulic units.

PENBERTHY INJECTOR COMPANY
Established in 1886 DETROIT Canadian Plant Windsor, Ont.

PENBERTHY PUMPS REMOVE SEEPAGE WATER

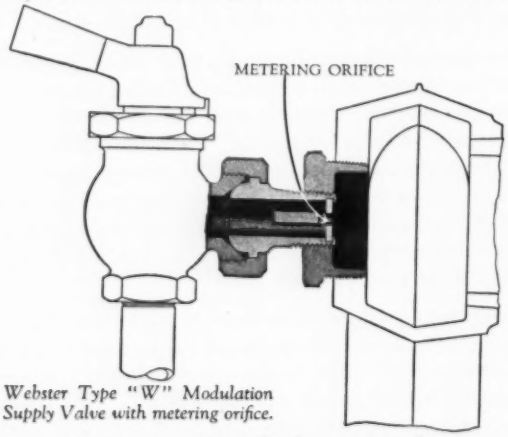
Radiator No. 1 and Radiator No. 32

each receive steam at the same time . . .

with the IMPROVED Type "R" System

No matter what its distance from the boiler, every radiator in the IMPROVED Webster Type "R" System gets a "square deal"—each receiving steam at the same time and in substantially the same proportion as all the others.

This remarkable improvement in steam heating is accomplished in this manner: Radiator No. 1, nearest the boiler, is equipped with a very small orifice. When steam reaches it the amount that



Webster Type "W" Modulation Supply Valve with metering orifice.

can enter is correspondingly restricted. As a result the steam soon flows on through the piping to the next radiator where the restriction of the orifice is slightly less, because the pressure of the steam as it reaches this further point is lower. So it goes, radiator by radiator, to the furthest point—the "pressure drop" to each radiator being *equalized* or *balanced* by installation of properly sized metering orifices.

The improvement in heating service effected by this new Webster development will be evident to all architects and heating contractors as well as owners who know the limitations of the older type systems—systems now rendered obsolete by this new standard . . . Quick heating-up, more even room temperatures, better control with the newer fuels, the newer types of light-weight radiation and the new regulating devices. Better performance too, with the older fuels and cast iron radiation.

A Real Modernization Opportunity

This new improvement can be incorporated in existing installations also and at small cost. The opportunity for *preferred* business with Webster Type "R" Systems is better than ever with the IMPROVED Type "R" System. Now you can offer a still more advanced heating system to prospects. Ask for the IMPROVED Type "R" System Bulletin—use the coupon. Let us tell you about this modernization opportunity.

Warren Webster & Company, Camden, N. J.
Pioneers of the Vacuum System of Steam Heating
Branches in 60 principal U. S. Cities—Darling Bros., Ltd., Montreal, Canada

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Webster
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WARREN WEBSTER & COMPANY, Camden, New Jersey: a R 26
Please send me your Bulletin describing the IMPROVED Type "R" System and information on modernizing older heating systems.

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D.E. 12-27-30

such individual benefits as could only be derived from a community of interest. But such associations, far-reaching as their activities have been, are forced to resort to exhortations and suggestions in their types of government. Such associations have lacked the ability to control action and the pressure on a number of members from unfair practices, has been greater than the combative influence of the association.

"The erratic, untrained contractor would be eliminated by a Certified Plumbing plan. No longer would it be possible for him to perpetuate bad practices to the demoralization of the industry."

—T. W. MERRYMAN

Although earnestly striving to render a signal service to individual members, association activity has been so general and impersonal and has, for some reason or other, lacked a dynamic definiteness to such a degree, that individual members have failed to gain an appreciation of its benefits. The result has been, in the last year or two, that a feeling has grown up that the association, under its present code of conduct, is powerless to apply a specific remedy and the influence and appreciation of the varied association activities has lost some caste with individual members.

It is known that one of the problems of the national association is a constant and growing loss of membership, and this same situation is evident in the local and state associations as well. This loss of membership can result from no other cause than that, under its present plan of operation, association activities are so general that individual members fail to gain any appreciable benefits therefrom, for, if individual members gained a large degree of benefit from membership in such an association, rather than to withdraw from that association, obviously they would insist on the maintenance of their membership therein.

It, therefore, becomes necessary for the association, in addition to the various activities it now conducts, to adopt some standard of practice that will permit it specifically and definitely to contribute to the benefits of these individual members. In addition to exhortation, persuasion and suggestion, it must set up a definite line of action that will permit control of the many hazards and problems that face its members today. If it does that, it is certain that membership in the association will be coveted and a new enthusiasm will permeate the entire plumbing industry.

This, furthermore, presents a signal opportunity in which the association, through the benefits afforded its individual members, can render a greater service to the public, and in so doing, it will increase the profit of the individual member as well as its own position in American industry.

What should such a specific and definite line of action be? For some years the writer has given a great deal of attention to the economic problems within the plumbing industry, and after having scrutinized a great many publications searching to find a solution that in a definite and active way would permit control of these problems to the profit and prestige of all, I feel that a concord of agreement is necessary whereby all will pledge themselves to the active support of a program to eliminate the harmful conditions of the industry and bring them under control through the creation of a *Certification of Quality Plumbing* such as will make it no longer profitable or possible to be unfair. In such reasoning the following facts were evident:

(1) Due to the concealment of imperfections and quality in plumbing installations, the public has not the ability to identify quality or lack of it in either material or workmanship. As a result, being sorely pressed by the struggle for existence, a class of plumbing contractors, who do but a small fraction of all plumbing work, often perpetuates the cutting of prices, substitution and dangerous competition which destroys the individual profit control of the whole industry.

There is nothing to encourage them to do otherwise. That class of plumbing contractors who possess acumen, ability, and fairness has insufficient control of the situation and cannot hope for a definite active control through the association regulations as they are now carried out.

"The co-operating manufacturers would benefit because certified plumbers would stand out as the preferential group of distributive representatives, trained in modern merchandising and handling the largest volume of business."

—T. W. MERRYMAN

(2) The second premise is that the continuation of so unsound a situation is unfair to the public, unfair to the manufacturer and unfair to the plumbing contractors and their jobbers. It causes losses in ungained profits, which are by far greater than the cost of correcting them.

(3) The third premise is that the solution for the predicament is not one of individual action,

that in fact the very predicament proves that the individual plumbing contractor, no matter how eagerly he desires, can not stand up against this situation and whip it; only by joining hands in the creating of an identity, a control that will make it worth while to be fair can any of us hope to succeed for long. Such an identity must be widespread and it must be accompanied by an improvement in the merchandising technique such as will enable each individual member to operate in his community with a new type of sales appeal designed and conceived to meet a selling resistance caused by the lack of good will, recognition, identity of quality and prestige.

The conclusion from these premises is that, since each is individually losing what can surely be recovered by such action, no time should be wasted in creating the machinery necessary to give the public the ability to identify quality plumbing in a way in which it can be realized that the element of protection which is its due, and for which it should and will seek, rests more particularly with the individual plumber whose services it can identify than with any other.

Such reasoning gave birth to the idea of *Certified Plumbing,* not as some indefinite or nebulous instrument which members might follow or not, of their volition, but as a dynamic instrument having sufficient explicit character to guarantee to the public a quality recognition through properly bonded work. The benefit of such a plan to all seems myriad and apparent.

The biggest single thing it would accomplish would be to permit control of all of the causes creating the many problems within the industry. The public would be able to identify both materials and workmanship. This ability would free it of all doubts and the installation sign of a Certified Plumber would, without doubt, add to the salability of property. In a comparable instance where such an identity has been created that of the "Red Seal plan" of the General Electric Co., it has resulted in a greater number of electrical outlets per installation, a larger size of service wires and a larger amount of current consumed.

There is no question but that such recognition for Certified Plumbing would create a larger replacement market, a higher average installation, specification of higher quality materials, and an increase of individual profit to all. The erratic, untrained contractor would be eliminated by such a plan. No longer would it be possible for him to perpetuate bad practices to the demoralization of the industry.

The co-operating manufacturer would benefit because certified plumbers would stand out as the preferential group of distributive representatives, trained in modern merchandising, handling the largest volume of business, and these manufacturers would, of course, be willing to throw their support and co-operation behind such a group of plumbers. Certified Plumbing would bring large rewards in increased prestige; it would free established plumbers from the hazards of price cutting and substitution. It would rid the industry of unfair practices and a Certified Plumber would again feel pride in belonging to the profession.

Visualizing the Idea

With these thoughts in mind, the problems of the plumbing industry and the generic solution for these problems was laid before the Plumbing Contractors Association of Chicago and they were asked to co-operate in developing the machinery necessary to execute it. The Certified Plumbing idea was reduced to definite form and shape and a series of meetings were held by this and various other committees by which the entire idea was studied, diagnosed and finally approved. These meetings and their attendant discussion aroused wide interest, and about this time, the Chicago association saw fit to introduce the subject at the National convention which resulted in the interest and action which has caused the submission of this presentation. The idea worked out, I felt that we should have actual visualizations of the various features of Certified Plumbing. At this time, I approached one of the largest organizations rendering advertising and merchandising counsel in the country.

> "Certified Plumbing would create a larger replacement market, a higher average installation, specification of higher quality materials and an increase of individual profit to all."
> —T. W. MERRYMAN

It is realized that nothing is of value until it is finally in form, and the various materials have been properly organized. It is well understood that you can assemble all of the parts of a locomotive, put it on a track, put coal in the fire box and water in the boiler, but, before the locomotive will go anywhere, it is necessary for someone to touch a match to the fuel and get the steam up to where it will make the wheels go around.

For the first time, Certified Plumbing affords the plumber the opportunity to present his entire service as a unit and in such form that the home owner will no longer think in terms of fixtures, pipe, fittings, etc., but will purchase an assembled, guaranteed product just as he purchases an automobile.

In other words, Certified Plumbing applies to a job done according to the highest standards, and presented to the public so that it will be recognized as such.

Five Principles of Certified Plumbing

There are five principles of Certified Plumbing:

(1) Every Certified Plumber must be properly

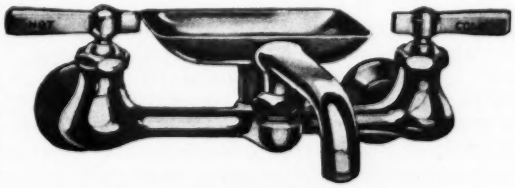
(Continued on Page 125)

"I speak from more than 10 years' experience when I say Chicago Faucets will increase your profits in 1931. They are real business builders in a class by themselves—nothing within a 1000 miles of them. I get more pleasure selling Chicago Faucets than any other line in the shop for the simple reason that customers get 100 per cent satisfaction. This public goodwill has helped me establish a successful plumbing business, so I'm mighty glad to recommend Chicago Faucets."

L. A. BAIN,
Chicago Master Plumber

The "Straight-8"

can increase your sink faucet profits in 1931



"Here's the very latest design in sink faucets," you can tell your customers. "It's the lowest, neatest, most compact sink faucet ever made; only 3¼ inches high. Made in all-metal or with china handles and soap dish; also furnished with the convenient hose and spray. Just the fixture for the new 8-inch low back sinks, though it looks equally attractive on old sinks. And with the well known standardized, removable unit, it will last a lifetime with a minimum expense for upkeep."

(The "Straight-8" is adjustable from 7¼ in. to 8¾ in.)

The Chicago Faucet Co.,
2700-22 N. Crawford Ave.,
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I want to start the New Year right by getting a copy of your new 76-page catalog.

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CHICAGO FAUCETS

Burnham Boilers
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Teamwork In Heating Is As Important As In Hockey

BURNHAM long fire travel Boilers win many a heating battle single handed. They better heating conditions wherever they go.

But if you want to shoot the puck straight into the net, with the least possible interference from radiation troubles, give a Burnham the backing of the Fero Radiators that are especially built to team up with it.

There's a full stock of Burnham Fero Radiators at each of our warehouses, ready for every crisis of the heating game.

Send for Catalog of Burnham Fero Radiators

Send for our special prices on Flue Cleaning Brushes

Burnham Boiler Corporation

IRVINGTON, N. Y.

Representatives in all principal cities of the United States and Canada

Letters to the Editor

A Statement by President Drake

The following statement reaches us from George H. Drake, president of the National Association of Master Plumbers:

"Many rumors have reached the National Office that it is possible the National Association may be involved in the 'Detroit Plumbers Racket,' based on the Federal decree handed down in the District Court of the U. S. at Pittsburgh, May 19, 1917.

"In connection with this rumor, we desire to state that the National Association has at no time recognized any Association in the City of Detroit since the Detroit Association of Master Plumbers was suspended by the Michigan State Association last spring."

(Signed) George H. Drake,
National President.

Appreciation of Co-Operation

To the Editor:

The splendid co-operation which you have been giving to the National Plumbing & Heating Institute, Inc., has been very apparent to the officers and board of directors. We feel that the space you have devoted to the affairs of the Institute and the writings and publications of our former President, F. W. Swanson, have assisted very materially in accomplishing the purposes for which the Institute was created.

We assure you of our appreciation and hope that you will find the affairs of the Institute so conducted during the coming year that we may continue to receive your favorable comment.

(Signed) Harry G. Starr, President,
National Plumbing & Heating Institute, Inc.

"Domestic Engineering" Appreciated in England

To the Editor:

We regret we shall not at present renew our subscription with DOMESTIC ENGINEERING. At the same time let us assure you of our appreciation of the very excellent articles which have so constantly appeared during our subscription of the last three years.

You will appreciate the fact that there is a large difference in method in English plumbing and heating, so that our interest has chiefly been confined to the advertising and merchandising sections and helps, also the advertisement pages illustrating trade and merchandise in use.

Never can it be said that a trade slump leaves DOMESTIC ENGINEERING unmoved. We think the American domestic engineer has a big friend in this journal, and were we asked for a slogan, ours would be—"SAIL INTO PROSPERITY via DOMESTIC ENGINEERING."

Please accept our grateful thanks for three years of faithful service.

(Signed) J. Geo. Jones,
Newport, England.

"Flat Rate Prices Will Not Help at All"

To the Editor:

Concerning the benefit, if any, to be derived by the plumbing contractor from a flat rate price schedule on repair work, I believe that if it were possible to tell accurately, before starting a repair job, what it would cost, a considerable amount of complaints of overcharging would be stopped.

On the other hand I do not feel it would be fair to all customers to strike an average price, as some would pay more than their job was actually worth and others less. Generally speaking I do not think flat rate prices would help the business at all.

Personally I feel that more real plumbers in the industry is the needed tonic.

Washington, D. C. Edward B. Eshelman.

"Fixed Charges on Certain Work Would Be a Fine Thing"

To the Editor:

We are pleased to acknowledge yours of the 12th inst., asking us to express our opinion regarding fixed charges for jobbing repair work. The writer has had his experience in this class of business, but we have not paid much attention to small jobbing recently, as our effort is toward larger contracts, which we find more interesting and just about as profitable, less the grief and annoyance of trying to satisfy some disgruntled customer.

Our opinion is, that if fixed charges could be made for certain classes of work, fixtures, and fittings, and then universally adopted by all heating and plumbing firms, it would be a fine thing, but to place fixed charges on all classes of work would not be so good because of exceptional conditions prevailing.

But fixed charges on all classes of work would not be so good because of exceptional conditions

The best way to handle a job of this exceptional nature is to visit the location and then name a charge in accordance with the nature of the job.

About a year ago one of the plumbing firms in this city had printed a bunch of folders stating fixed prices for labor services, traps, faucets, stop and wastes, closet bowls and seats, and a long list of other repair fixtures and fittings, which were mailed out to the public in general as listed in the telephone directory. A few days later another plumbing firm had printed a similar list with prices a shade less in cost and mailed out to the same public.

Before much can be accomplished in universal "fixed charges" those in the plumbing and heating business, the trade in general, must establish a mutual respect for each other which means "live and let live." Then there is the journeyman, "out of a job," that is in the neighborhood, picking up odd jobs at barely the labor cost, and this condition extensively cuts into the business of the established shop.

Respectfully yours,
Bell Specialty Heating Co.,
(Signed) M. E. Bell.
Birmingham, Ala.

RETAIL ADVERTISING SERVICE

Meet 1931 With Confidence

And let your community know that you are doing so. We don't advocate any hysterical "buy now" campaign—but a continuance of normal advertising, and letting your public know why you are continuing your selling effort in the new year.

Confidence in the New Year

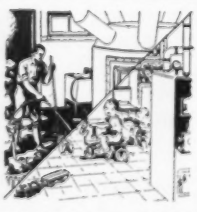
We've put behind us the inevitable result of booming times. Now we're ready for constructive work, and this firm, for one, will continue its normal operations in the belief that the hectic period is past, and that those with homes will want to maintain them in first-class condition.

(In this space Your Name, etc.)

A single column ad

THE New Year beckons to constructive efforts to make up for the drag of 1930. Homes need renovation, renewing, and we believe that, with the upturn before us, there will be a sane and healthy program of expenditure on improvements. We offer our usual careful, painstaking service.

(In this space Your Name, etc.)



BELL PHONE. WAV. 8123 REGISTERED

HARRY L. NITTERAUER
PLUMBING and HEATING
7039 North 20th Street
Philadelphia,

At the left is reproduction of the top part of the letterhead of H. L. Nitterauer, of Philadelphia, showing one use for the cuts published in this section.

Copy for the Confident

Below are publicity items for the newspaper, and sales letters for customers. Win confidence by showing that you have it for the new year.

The New Year Brings New Confidence

We are all of us ready to forget 1930; and we believe that the constructive factors are now free to operate in taking up the "slack" caused by 1930. We will continue our customary messages in this paper, and hold ourselves in readiness for calls for service on new or old homes.

(In this space Your Name, etc.)

A one column ad

If you are using any of this copy, send us samples so that we may keep in touch. Perhaps we'll be able to offer further assistance.

At any rate, make use of the ads and letters and publicity—they will help create new business for you.

Here are three publicity items to hand to your newspaper

PLENTY OF MONEY FOR HOME NEEDS

"Savings bank records," says Harry Brown, local plumbing and heating contractor, "show increases for the year just past.

"That means that there is ample money for home improvements — and I believe that many things that were not taken care of last year will be done during 1931. We are leaving the period of reaction behind us and are ready for normal expenditures again."

1931 TO MAKE UP FOR 1930 "SLACK"

"There is compensation in everything," says Harry Brown, local plumbing and heating dealer. "What folks didn't buy in 1930 they'll have to buy in 1931. Boiled down, that's all these things they call 'economic cycles' amount to. We buy too much—then we buy too little (and that's what we did in 1930) and then we balance things up.

"There is plenty of money, and we've had a whole year and more to get over our little spree. I'm planning for a good volume of work in 1931."

NO PROPHET NEEDED FOR PROSPERITY

"You don't have to be a prophet now to point out that prosperity is dated 1931," says Harry Brown, local plumbing and heating contractor. "It's got to come because we've been marking time for over a year.

"I don't know anything about composite dollars and other fancy economic terms, but I know from experience — and from local signs — that we've done our penance for three or four years of 'boom' and now we're ready to spend sanely for necessary things. I'm getting ready for plenty of work in 1931."

Here are two sales letters to send to old customers

Dear Mr. Blank:

First let me wish you a Happy New Year--and then let me admit that I do it with a lot more feeling that it will mean something for 1931 than when I said those words at the beginning of 1930.

We've had fifteen months--some figure more--to get over our little period of booming time. We've held off on this and that. And now "this" and "that" are demanding attention. The result is that folks will be buying clothing, furnishings for the home--everything that they didn't buy during 1930. That means more work for all of us, more money in circulation.

I didn't think much of the "buy now" campaigns last fall. But I do want to go on record as expressing my belief that the sheer force of necessity is going to make 1931 a satisfactory year. We have to replace the things we used up in 1930, but didn't replenish during that troubled time.

As you begin your own planning for the home, I'll be glad to have you bear me in mind. We've specialized in remodeling work, along with our work on new homes, and have many interesting new things of interest to the home owner.

Very truly yours,
HARRY BROWN

Dear Mr. Blank:

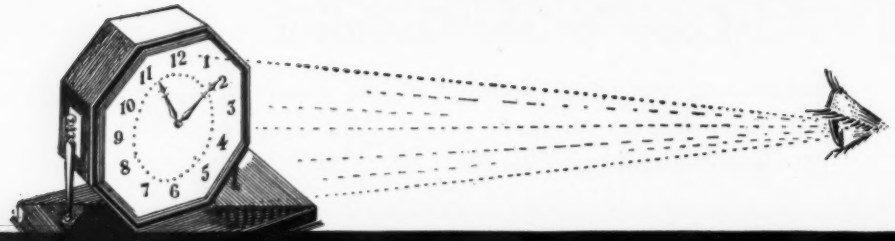
There is a "time in the affairs of men" when things can't do anything but get better. Personally, I believe that that tide has commenced to flow and is gathering strength every day.

With that very definite conviction in my mind, I am writing to my entire customer list, suggesting that now is the time to have those things about the plumbing and heating in the home--those things which were put off during the troubled 1930-- seen to before they develop into difficulties that will not respond to repairs.

Then, too, the time is right for replacements, and for the addition of plumbing and heating equipment to the home. You know, of course, that commodity prices are still low--which makes this a particularly good time for you to look into the matter of the additional bathroom, or the replacement of a worn-out fixture, or the installation of a new heating system.

I'd be glad to talk any such matters over with you--it will entail no obligation. But I believe that you will see the genuine economy in having these things done now.

Very truly yours
HARRY BROWN



Here's where it pays to watch the clock!

IT may not pay a clerk to watch the clock but it certainly pays a plumber. Time means money—the quicker the installation—the greater the profit on the job. Hence M-VB No. 1 Ball Cocks!

M-VB No. 1 Ball Cocks are simply, strongly constructed. They install with a minimum of time and labor—and work long and efficiently, requiring no unprofitable after-servicing. They cement customers' good will—and make future jobs easier to get.

When competition knifes your price—save installation time—insure your final profit with M-VB Ball Cocks.

Profit-wise plumbers everywhere are doing just that! You can, too. Install M-VB No. 1's on your next job and watch the clock for working time saved. You'll appreciate it when you realize that each extra minute means an extra profit!

M-VB No. 1 Ball Cocks come completely boxed, ready for immediate use. Together with the other ball cock models of the M-VB Line, they constitute an all-around, up-to-date answer for *anything* in the way of ball cocks you need—and for *everything* in the way of profits and service you can expect.

Write for catalog and data on the proper ball cock for the proper job!

SCOVILL MANUFACTURING CO., Morency-Van Buren Division

Sturgis Michigan

M-VB

SUPPLY NEWS

AMONG MANUFACTURERS, WHOLESALERS AND SALESMEN

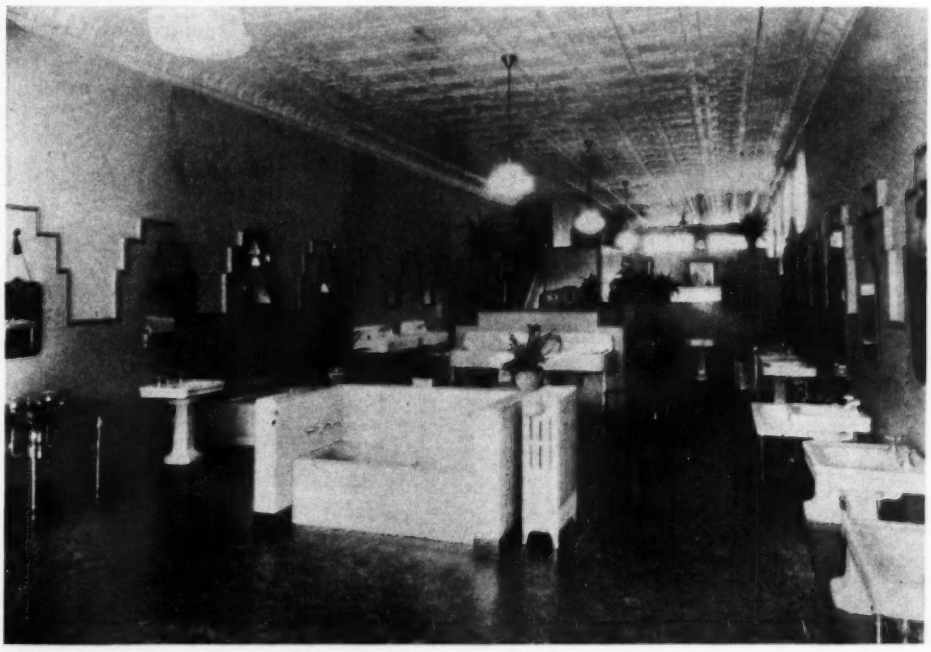
Opens New Showroom at Charleston, W. Va.

The Bailey-Farrell Mfg. Co. of Pittsburgh, Pa., has moved its Charleston, W. Va., branch from Elizabeth street to 912 Virginia street, which is in the downtown district. The company now occupies an entire five-story building with an up-to-date showroom on the first floor. The showroom, office and shipping department occupy the first floor of the building and the rest of the building is used as a warehouse. The showroom is of modernistic design, and about three-fourths of the fixtures are in colors. The day before the formal opening master plumbers, architects and a few general contractors were invited to visit the showroom. At 7 p. m. a buffet dinner was served. Among the out-of-town guests attending were: E. H. Eggleston and K. M. Buford of the American Radiator Co.; Lee M. Kellar of the Trenton Potteries Co., Harry J. Harte of Speakman Co., John L. Henry of Kohler Co., Paul S. Snelsire of Pittsburgh Valve & Fittings Co., Mr. Young and Mr. Marshall of Mueller Brass Co., Harry Draper of the American Brass Products Co., W. B. Bryar, J. C. Gilmore and N. F. Keisling of Bailey-Farrell Mfg. Co., Pittsburgh. On the following day, the showroom was opened to the public, and about a thousand people attended, despite the downpour of rain. C. W. Long is manager of the Huntington and Charleston, W. Va., branches, and R. W. Mullens is local manager.

◆

Coatesville Boiler Works Moves Main Office

The Coatesville Boiler Works, Coatesville, Pa., has moved its main office to its Middletown plant, at Middletown, Pa., where all mail and other communications are to be addressed. The Coatesville Boiler Works recently purchased the Middletown plant of Standard Steel Car Co. (Pullman Corp.) This plant has approximately one half million square feet of floor space.



The showroom of the Bailey-Farrell Mfg. Co. at Charleston, W. Va.

Surface Combustion Expands Organization

Surface Combustion, Toledo, Ohio, has added the gas equipment division of the Columbus Heating & Ventilating Co., Columbus, Ohio, to its list of controlled companies. This acquisition, it is announced, is another step in the expansion program designed by Surface Combustion to cover the manufacture of gas heating and cooling equipment for industrial and domestic purposes.

The Columbus company is to be under the management of Frank H. Adams, vice president and general manager of Surface Combustion, a company controlled by the interests of Henry L. Doherty & Co., New York City, with headquarters at Toledo. No further changes in the personnel have been effected.

◆

George H. Gorton Dies Suddenly of Heart Attack

George H. Gorton, vice president and general manager of W. B. Young Supply Co., Kansas City, Mo., died on December 19 following a sudden attack of heart disease. Mr. Gorton was in his 62nd year. He started in business in Kansas City 40 years ago, and was a past president of the Central Supply Association.

◆

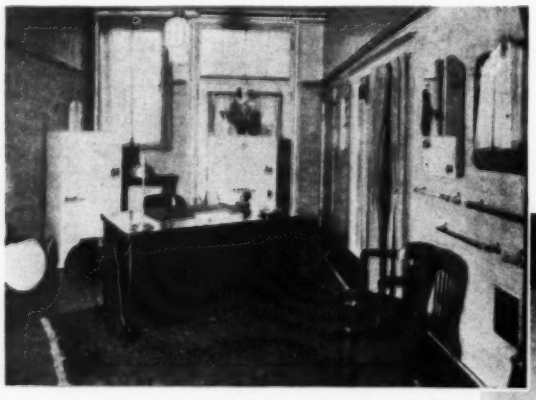
Meer Made Products to Move

Meer Made Products, manufacturers of waterproofed materials, 1321 South Michigan avenue, Chicago, will move to larger quarters after the first of the year, at 564-570 West Adams street, in that city.

◆

Opens New Showroom

W. H. Marshall Co. has opened a new showroom at 293 Walnut street, Newtonville, Mass., which is being conducted in conjunction with the firm's warehouse at 14-20 Bailey place, that city. The display, featuring bathroom fixtures and accessories together with kitchen equipment, including electric refrigerators, presents an exhibit of modern equipment.



Two views of the attractive new showroom of W. H. Marshall Co., Newtonville, Mass.

Otto J. Groehn Now Vice-President and General Manager of Clayton & Lambert Mfg. Co.

Otto J. Groehn, for the last six years with the Hudson Motor Car Co., has been made vice president and general manager of the Clayton & Lambert Mfg. Co. of Detroit, Mich., and he assumed his new duties on December 1. Mr. Groehn was formerly associated with the Clayton & Lambert Mfg. Co. from 1915 until 1925, when the Hudson Motor Car Co. absorbed the former company's metal stamping department. His return to the Clayton & Lambert Mfg. Co. is a high spot in the expansion program undertaken about a year ago by that company in the erection of its new stamping plant on French Road, Detroit, one of the most modern in the industry.

Mr. Groehn is only in his 43rd year and is known throughout the automotive industry for a large number of inventions and new manufacturing processes which were developed under his supervision. He is one of the pioneers of the metal stamping business, having served his apprenticeship in the old Briscoe Manufacturing Co.

◆

Buys Thomas Kelly & Bros., Inc.

The Modern Equipment Corp. has purchased all of the assets, assuming none of the liabilities, of Thomas Kelly & Bros., Inc., Chicago. The Modern Equipment Corp. will continue the manufacture of the products formerly made by the Kelly firm.

◆

Appoints New Distributor

The United States Blower & Heater Corporation, Minneapolis, Minn., has appointed the Belanger Fan & Blower Company of Detroit, Mich., as distributors of its products in the lower peninsula of Michigan for 1931.

◆

Will Transfer Manufacturing Operations

Manufacturing operations of the Fuller Lehigh Company are to be transferred from Fullerton, Pa., to the Barberton, Ohio, works of The Babcock & Wilcox Company. Management, engineering and sales departments will move to New York City. No definite date has been set for these changes but it is expected that they will be made early in 1931.

The corporate identity of the Fuller Lehigh Com-

RIGHT THROUGH

YOU CAN'T LOCK IT ON A PIPE--POWERFUL I-BEAM HANDLE WITH COMFORTABLE GRIP--HOOK JAWS YOU CAN'T BEND OR BREAK---NUT ALWAYS RIDES FREE IN OPEN HOUSING

AS GOOD AS THE HOUSING

UNCONDITIONAL GUARANTEE
If this Housing ever Breaks or Distorts we will replace it Free
THE RIDGE TOOL CO. ELYRIA, O.
TRADE RIDGID MARK PAT. PEND'G 14

When you ask your jobber about RIDGID Wrenches, ask also about the RIDGID Pipe Cutter with the new "blue" blade, RIDGID Vises with new jaws that won't mar nickel pipe, the RIDGID Super-wrenches with compound leverage, and the new RIDGID Die Stock that threads four sizes of pipe with one set of chasers.

THE RIDGID is a pipe wrench that gives you more than other wrenches give and THEN SOME!

It's a tool you don't have to go easy with. Use it with utmost confidence on the most stubborn pipe. For every part of a RIDGID is as powerfully built as the housing we guarantee can't break or distort.

The I-Beam handle with the hang-up hole has exceptional strength. The jaws grip and let go instantly. They won't slip or lock on pipe. The heel jaw of special steel wears remarkably well. So does the hook jaw with the pipe scale. And you'll find the adjusting nut always free riding in open housing even after much and severe use.

For a new pipe wrench experience—ask your jobber for RIDGID.

THE RIDGE TOOL COMPANY
Dept. DE, ELYRIA, OHIO

RIDGID
PIPE WRENCHES VISES AND PIPE CUTTERS
WRENCHES

MEASURE

REG. U.S. PAT. OFF.
TONCAN
COPPER
MO·LYB·DEN·UM
IRON PIPE

with a YARDSTICK OF 365 DAYS

By no other standard can the true value of Toncan Iron Pipe be gauged properly. Compared with ordinary pipe—in measurements of 365 days—the longer life of Toncan Iron Pipe is most convincing. It is a trouble-free pipe of highly refined iron, copper and molybdenum, with permanence processed into every tiny grain of metal. Use the 365-day yardstick to determine how much any pipe will cost—and Toncan Iron Pipe certainly will cost less.

For more than 20 years, Toncan Iron has been successfully combating rust and corrosion. Toncan Iron Pipe has demonstrated in service in every industry its ability to keep on working faithfully and economically, years after other ferrous pipe has had to be replaced.

The story of Toncan Iron Pipe for Permanence will be sent to pipe users gratis upon request.

. as protection to you we mark it BLUE

REPUBLIC STEEL CORPORATION

GENERAL OFFICES YOUNGSTOWN, OHIO

BIRMINGHAM DENVER PHILADELPHIA BOSTON DETROIT PITTSBURGH BUFFALO EL PASO CHICAGO INDIANAPOLIS SAN FRANCISCO CINCINNATI MILWAUKEE SEATTLE CLEVELAND LOS ANGELES ST PAUL DALLAS NEW YORK ST. LOUIS TULSA TOLEDO

Group of architects, guests and company officers at luncheon of Standard Sanitary Mfg. Co.

pany will be maintained, according to an official announcement, but in some cases the personnel will be merged with that of the parent company, The Babcock & Wilcox Company.

Sales offices of the two companies are now located close to each other, and the erection and service departments of the two concerns have been combined for some time, so the change in location of Fuller Lehigh manufacturing, sales and engineering represents an important step in co-ordinating activities of the two organizations.

E. G. Bailey, president of the Fuller Lehigh Company, has been elected a vice president of The Babcock & Wilcox Company.

◆

Deming Co. Celebrates Fiftieth Anniversary

A celebration, sponsored by the Deming Foremen's club, was held recently in honor of the fiftieth anniversary of the Deming Company of Salem, Ohio. Thirty-nine employes of the company have been in the firm's service twenty-five years and more, and thirty-four of this number attended the celebration. W. L. Deming, president, and Moses R. Elliott have forty-eight year records, while Henry George Harris and Elihu F. Gibbs have been with the plant for forty-seven years. A roll call of these thirty-nine employes, in charge of J. B. Garber, who has been in the service of the company for forty-five years, was a feature of the program.

William L. Deming gave a brief review of the company's history. Following his talk, Mr. Deming was presented with a cane by the Foreman's club, with R. R. Miller making the presentation. "Co-operation in Industry" was discussed by Charles T. Brooks, a director in the company. "Present Conditions" and "Future Conditions" were the subjects of the talks by Charles P. Morlan and G. R. Deming, secretary-treasurer. F. J. Emeny's subject was "Why the World's Best!"

◆

Opens New Showroom

The Coal Carburetor Co., New Brunswick, N. J., has just opened a new showroom on Broadway at 162nd street, New York City.

Urges New Designs for Bathrooms

The plumbing and heating industry would benefit from making a greater effort to produce products according to the needs and tastes of its customers, according to the views of Charles K. Foster, vice president of the American Radiator Co., expressed in a short talk on December 19 at Chicago. The occasion was a luncheon given by the Standard Sanitary Manufacturing Co., Pittsburgh, Pa., to a group of architects.

Mr. Foster said that probably manufacturers had been so occupied with the problems of production and of the most efficient use of their equipment, that the tastes and desires of the customers had not been actively solicited and followed.

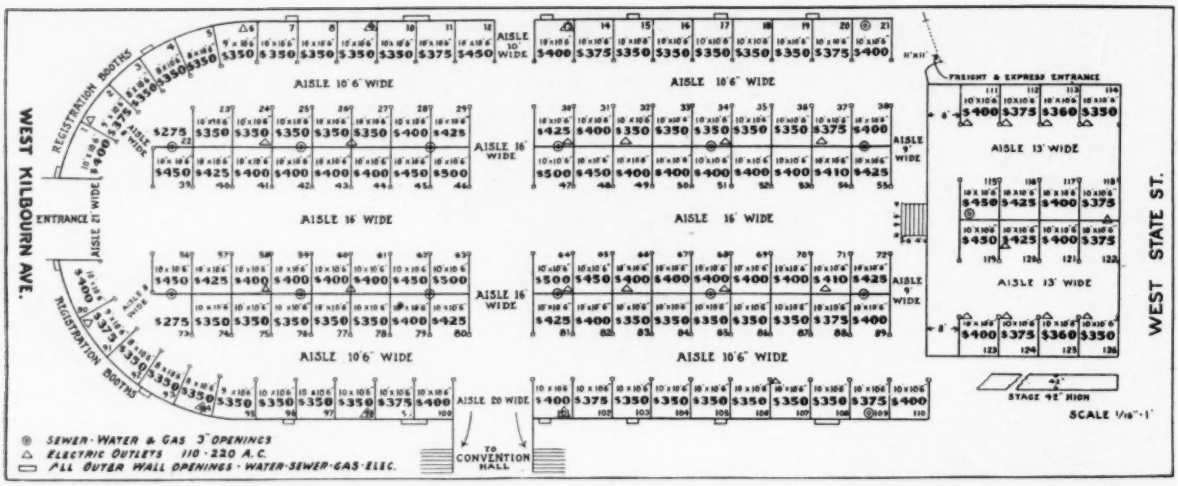
His remarks were attracted by the nature of the meeting, which was the announcement of the results of a contest carried on by the Standard Sanitary Company among architects to encourage new designs for bathrooms. The prize winning designs were displayed, selected from among a large number submitted.

Joseph F. Carroll of Chicago, supervisor of the northern division for the Standard company, was toastmaster. In addition to the jury of awards and architects attending, were the following officials of the Standard Sanitary and American Radiator Companies: E. L. Dawes, vice president, Standard company; H. A. Grothus, manager Chicago sales district, Standard company; David Kennedy, vice president, American company; K. MacKenzie, Chicago branch manager, Standard company, and William Scudder, vice president, American company.

◆

Christmas and New Year's Greetings

A Christmas and New Year greeting of cheer together with an expression of his appreciation for the fraternal spirit, constructive thought and action which have been manifested, was mailed to members of the Eastern Supply Association, New York City, by Leo O'Neil, president of that organization. A letter from Frank S. Hanley, secretary, called attention to the past due account department of the association, which collects a large sum of money annually for the members.



The floor plan of the Arena of the Milwaukee Auditorium, Milwaukee, Wis., where the Exposition of plumbing, heating and allied products will be held, in connection with the 49th annual convention of the National Association of Master Plumbers

N. A. M. P. Exposition Plans Announced

FLOOR plan and booth details for the 1931 Exposition of plumbing, heating and allied products, to be held in Milwaukee, Wis., June 22, 23, 24 and 25, 1931, in connection with the 49th annual convention of the National Association of Master Plumbers, have just been announced by the Convention and Exposition Committee of the National body. The Exposition will be held in the arena of the Milwaukee Auditorium, under the same roof as Plankinton Hall of the Auditorium where the master plumbers will meet in convention June 23, 24 and 25, 1931.

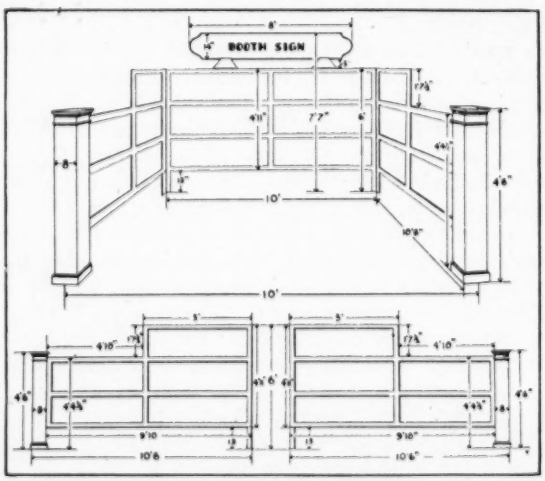
The Exposition Hall is one of the finest in which the association has ever held its display. The Arena is most attractive and spacious, 220-ft. long by 100-ft. wide, without a pillar or post in the exhibit area. There will be only 126 booths in the Arena, including 16 on the stage. Practically all of the booths in the Arena will be 10-ft. wide by 10-ft. 6-in. deep. They are designed to enable the exhibitor to show his goods to the best advantage and, at the same time, make an attractive display as a whole. The back and side panels are of beaver board, brown in color with strips of a lighter color setting off the panels and a post of the lighter color at the front of the booth. Sketches showing front and side views, and complete details, appear on this page.

All booths are ¼-in. thick and cannot be used for hanging fixtures or other materials thereon. Where an exhibitor desires to fasten any portion of his display to side or rear walls it will be necessary to construct, within the booth, a special wall for that purpose.

The floor plan on this page shows each booth, number and cost. It also gives the aisle dimensions and shows the outlets where water and waste connections are available. Gas and electricity can be obtained at any booth in the Arena, but it is advisable that firms, requiring water and sewer connections, select a booth or booths, as near as possible to the outlets in the arena and on the stage. The Exposition Bureau should be instructed as to what special connections are desired.

There will be a single daily session of the National convention in Plankinton Hall of the Milwaukee Auditorium June 23, 24 and 25, starting at 10 a. m. and closing at 2:30 p. m. This will be followed at 3:30 p. m. on June 23 and 24 by a program of the sales promotion committee, in the same hall, to conclude at 5:00 or 5:30 p. m. Entertainment features for both men and women will be held in the Auditorium on Tuesday and Wednesday evenings.

The delegates and guests will have many opportunities daily to visit the exhibits in the Arena, which is on the main level, one floor below the convention hall, as the entrance is so arranged that all who go to and from



Front and side view, with complete measurements, of a typical booth in the Milwaukee Auditorium, where the Exposition in connection with the 49th annual convention of the N. A. M. P. will be held

POINT CONTACT

M. I. F. Copper Tube Fittings remain tight! Two Point Contact of the double 45-deg. seat holds them so securely that no amount of vibration or pull can loosen them.

Consider this, along with the fact that it is much easier to make up an M. I. F. Copper Tube Fitting, and you will see at once why it has found such instant favor. The tubing does not have to be cut off perfectly square. It does not to have be flanged to the fracturing point. That is why M. I. F. Copper Tube Fittings save time and do a better job.

Ask your jobber today, to show you an M. I. F. Copper Tube Fitting

M. I. F. COPPER TUBE FITTINGS

MALLEABLE IRON FITTINGS M I F COMPANY, BRANFORD, CONN.

CADWELL No. 10 NON-ADJUSTABLE AIR VALVES

MAKE EVERY RADIATOR DO ITS SHARE

In many buildings in your own territory the heating system is being blamed for faulty efficiency when the fault is really at the radiator.

Cadwell No. 10 Non-Adjustable Air Valves make each radiator do its full share of the work.

They eliminate every particle of cold air and then close instantly on steam. There is nothing about them to break down or get out of order.

Increase your remodeling business by recommending and installing Cadwell No. 10 Air Valves.

Ask your jobber to supply you

LOOK FOR OUR CATALOG in PLUMBING & HEATING CATALOG

The BEATON & CADWELL MFG. CO.

Established 1894

NEW BRITAIN, CONN.

the convention or entertainment halls are compelled to pass through the Exposition Hall. The restaurant in Market Hall of the Auditorium will serve attractive meals at all hours, making it unnecessary for those attending the convention and exposition to leave the Auditorium from morning until night.

◆

Is Honored With Dinner

The personnel of the New York office of The Trenton Potteries Co., Trenton, N. J., gave a stag dinner at the Merchants and Manufacturers Club, New York City, to John B. Lansing, one of its members, on the eve of his marriage on November 29 to the daughter of Charles A. Ries, superintendent of the company's plant.

Henry Garrity arranged for the affair, which was attended by John Lasette of F. B. Lasette, Inc., Long Island City; William Dobbs, New York manager of Peck Bros. & Co., New Haven, Conn.; Charles Wall, New York office of Sloan Valve Co., Chicago; Carl Henzel of Dimock & Fink Co., New York City; Joseph Woods, New York manager of Speakman Co., Wilmington, Del.; William Staiber of The C. F. Church Mfg. Co., Holyoke, Mass., and Horace Stoneham, son of Charles E. Stoneham, owner of the New York National League Baseball Team. Those of the New York office of The Trenton Potteries Co. present were Fred C. Allen, manager; Jesse Thorn, and J. E. Weenerstrom. Mr. Garrity was ill and could not attend.

◆

New York and New Jersey Salesmen Hold Special Meeting

A special meeting of salesmen held December 13 at the Governor Clinton Hotel, New York City, which was arranged for by the New York chapter of the National Association of Plumbing and Heating Salesmen and attended by approximately twelve members of the latter organization and an equal number from the New Jersey chapter, was addressed by William E. Taylor, secretary of the fact finding committee of the New York Building Congress. In view of the inter-relationship of the various associations within the heating and plumbing industries, Mr. Taylor in his talk, by way of a suggestion, said that one of the constructive things the chapters might do is to fully inform their membership of the functions and purposes of each, so that they may be discussed intelligently.

Concerning the continuance of the salemen's jobs, he said: "There is not enough creative sales work done and the percentage of salesmen seemingly willing to be order-takers is too large. Present circumstances have indicated how easily and without appreciable loss salesmen may be eliminated." Mr. Taylor pointed to the insurance man, who succeeds with price and quality about on a par with that which is offered by his competitor, as his idea of a real salesman. Offering the opinion that there is a need for an organization of salesmen of the creative type which requires a thorough understanding of the product offered for sale and its applications, Mr. Taylor further suggested prompt opening and closing of meetings and closer contact between salesman and employer as among the means through which success in the conduct of the associations may be attained.

William F. Weber, secretary of the New York chapter, was elected temporary chairman and Anthony Smith of the New Jersey chapter, secretary of the meeting. Secretary Smith read letters from R. J. Maggi of Pittsburgh, William Boales of Detroit, and Frank Murphy of Cleveland, each telling of the disbandment of the chapters in his city. The Cleveland chapter, according to the letter from Mr. Murphy, dissolved about two years ago. At the conclusion of the reading of a resolution passed by the New York chapter to call this meeting, an effort on the part of Chairman Weber to have adopted an order of business for the meeting, which included reports of officers, committees and the election of national officers, was voted down.

It was decided at the close of a lengthy discussion that in view of the meeting which has been called by W. W. Morgan, president of the National Association, for January 24, 1931, no further action should be taken. Luncheon was served in the hotel and in the evening a dinner was enjoyed by a few of those in attendance at the meeting.

◆

Death of Frank N. Wells

Frank Newton Wells, president of The Beaton & Corbin Mfg. Co. of Southington, Conn., passed away on November 13, 1930, after an illness of only a few days, as told briefly in the issue of December 13.

Mr. Wells was the son of Isaac N. and Katherine Butler Wells of Wethersfield, Conn. He was born in

Frank N. Wells

Pipin, Wis., on March 12, 1858, but at the age of six years the family returned to Connecticut, and Mr. Wells spent his boyhood in Wethersfield and Bloomfield.

When Mr. Wells entered on his business career, he moved to New Britain, Conn., were he was connected with the Humason & Beckley Mfg. Co. for a period of twenty-eight years, and when his connection with that company ceased he was its treasurer. As far back as 1893 Mr. Wells was one of the organizers of The Beaton & Corbin Mfg. Co., and from that time on was always financially interested in the company, and served as one of its directors. It was not, however,

until the death of his father that he assumed the presidency of the corporation and devoted his entire time to its affairs. In the course of his long connection with The Beaton & Corbin Mfg. Co., Mr. Wells built up a wide circle of friends in the plumbing and heating industry.

Mr. Wells' career was marked by continuous unselfish service in the civic interests of the towns in which he lived. After he moved to Southington he represented that town as a member of the Connecticut legislature in the sessions of 1925 and 1927, and served the town of Southington as a member of its school committee, public library committee and various other capacities.

◆

Death of Thomas J. Lee, Jr.

Thomas J. Lee, Jr., of Irvington, N. J., died December 5 while visiting the offices of J. L. Mott Co., Inc., Trenton, N. J. Mr. Lee, prominent in Northern New Jersey as a wholesaler of plumbing and heating materials, organized the company at Irvington which bears his name, about five years ago. For a number of years he was chief health officer of Newark, N. J. He was 55 years of age and is survived by his widow and two sons. The sons Arthur T. and Howard W. will continue the business in which they were associated with their father. Funeral services were held from his home, 10 Burrough way, Maplewood, N. J. He was prominent in state political circles.

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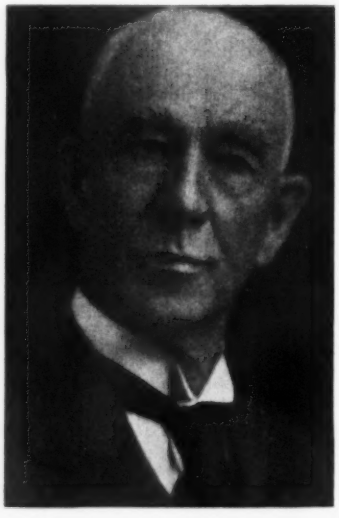
Death of Robert J. Gross

Robert J. Gross, whose death on November 21 was mentioned in the last issue of DOMESTIC ENGINEERING, was for many years prominent in the heating industry. He organized the United States Radiator Co. at Dunkirk,



Robert J. Gross

N. Y., in 1890, and was president of that company until 1910. He was the chief factor in bringing about the merger of his company with the consolidation which is now the United States Radiator Corp., Detroit, Mich. He was president of the corporation for several years, and was a member of the board at the time of his death.

Business Personals

EVINS F. GLORE, SR., president of both Evins F. Glore & Son, Inc., and W. A. Russell & Co., New York City, has been made president and general manager of the Republic Radiator Co., Baltimore, Md. Evins F. Glore company maintains offices in the Grand Central Terminal building, New York City, and warehouse facilities in Long Island City, N. Y.

JOHN J. L. MCCLINTOCK has been appointed manager of the North Philadelphia Supply Co., wholesalers of plumbing and heating supplies, Philadelphia, Pa., to fill the vacancy created by the resignation of PAUL O. LOESCH.

HAROLD S. BARD has been appointed district sales representative of the Reading Iron Company, Reading, Pa., with offices at 1714 Engineering building, Chicago. Mr. Bard succeeds R. A. GRIFFIN, resigned. Mr. Bard has been associated with Reading Iron Company for the past seven years in the capacity of salesman with headquarters in the New York district. Prior to his connection with the Reading Iron Company, Mr. Bard was also employed in the iron and steel field.

HARRY A. JAY has just been appointed representative for the Semler Co. of Jeannette, Pa., to cover the states of Illinois, Indiana, Michigan and Wisconsin. Mr. Jay's headquarters are at 72 North Michigan avenue, Chicago, and he will assume his new duties on January 1, 1931.

S. H. TAYLOR, JR., has been appointed by the Lincoln Electric Co., of Cleveland, Ohio, to take charge of the Pacific coast district, with headquarters at 812 Mateo street, Los Angeles, Calif. He will succeed W. S. STEWART, who has recently been appointed district manager of the Cleveland territory for this company. L. P. HENDERSON has been appointed manager of the San Francisco office, and E. J. PFISTER, formerly of the Philadelphia and Allentown offices, has been made district manager of the Kansas City district with offices at 405 R. A. Long building, Tenth and Grand streets, in that city.

O. N. YULE, who has been connected with Frost Company, Kenosha, Wis., for more than twenty-five years, has been transferred to the territory left vacant by the retirement of W. J. Palmer and will in the future cover the west coast and southwest territory. Mr. Yule formerly covered the south and southeast territory for the Frost Company.

JAMES MARATTA has been made director of retail sales of The Coal Carburetor Co., New Brunswick, N. J. Mr. Maratta was formerly sales director for the Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

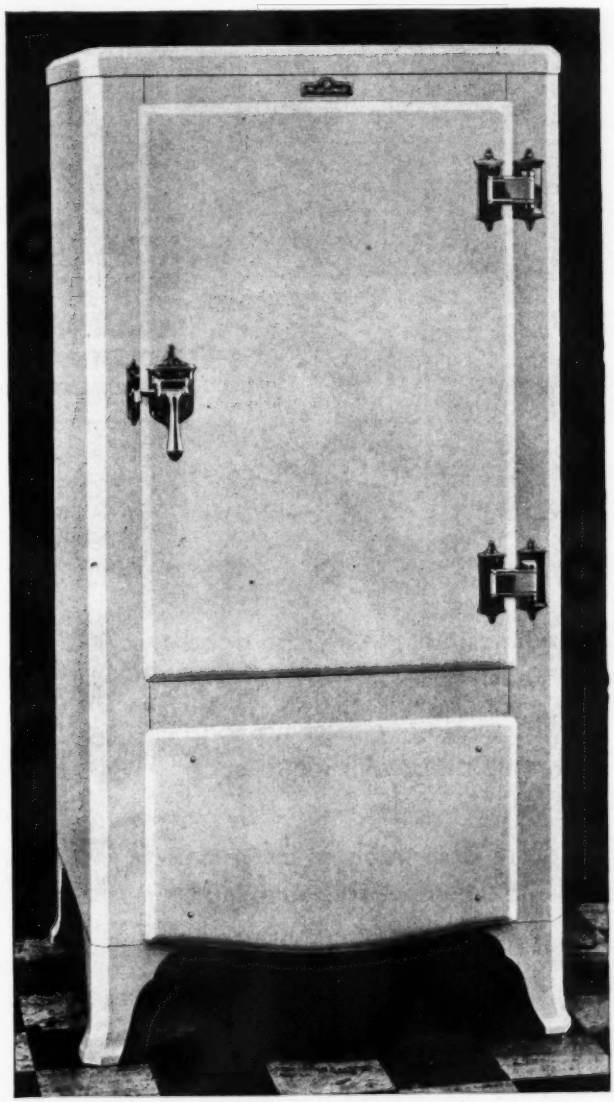
◆

Moves Philadelphia Office

The Lincoln Electric Co., of Cleveland, Ohio, has moved its Philadelphia office to the Commerce Building in that city. This move was made to provide additional space for the sales and service of arc welders, motors and welding supplies and to provide space for making tests on arc welded designs. This office is in charge of D. C. Anderson.

For 1931 . . .

MAYFLOWER offers an *entirely new* sales feature!



The New MAYFLOWER is made in five models—four, five and six cubic foot Standard Models, and a seven and nine Deluxe Model. Lacquer-Porcelain and all-Porcelain Finish.

Trupar
MANUFACTURING CO.
DAYTON, OHIO U.S.A.

New period style beauty, makes irresistible appeal to every housewife

New Low Prices get the business for you . . . . .

Here is startling new beauty . . . definitely styled in a true period design. It is the kind of beauty that housewives know about and want because it suggests the grace and charm of the Colonial period instead of the squareness of the old-fashioned ice box.

And combined with distinctive beauty are those worthwhile features that have made Mayflower Electric Refrigeration an exceedingly profitable dealer proposition for *many years past.*

First, there is complete freedom from installation worries. The Mayflower comes to you ready to "plug in". Then Mayflower offers a definite price advantage. Each model is sturdier, heavier and has greater capacity.

Easily Demonstrated Sales Features

And that's not all. The Mayflower offers all those selling features that mean convenience for the housewife and sales for you... features such as graceful broom-high legs... handy temperature control... extra large shelf area... heavier insulation... a quiet, dependable, trouble-free mechanism that is amazingly economical to operate.

Mail the Coupon . . . NOW

Today electric refrigeration offers an unusual opportunity to dealers because it is fast becoming a household necessity instead of a specialty item. Get the facts about Mayflower refrigeration ... and your share of this new business. Mail coupon today!

MAIL THIS NOW

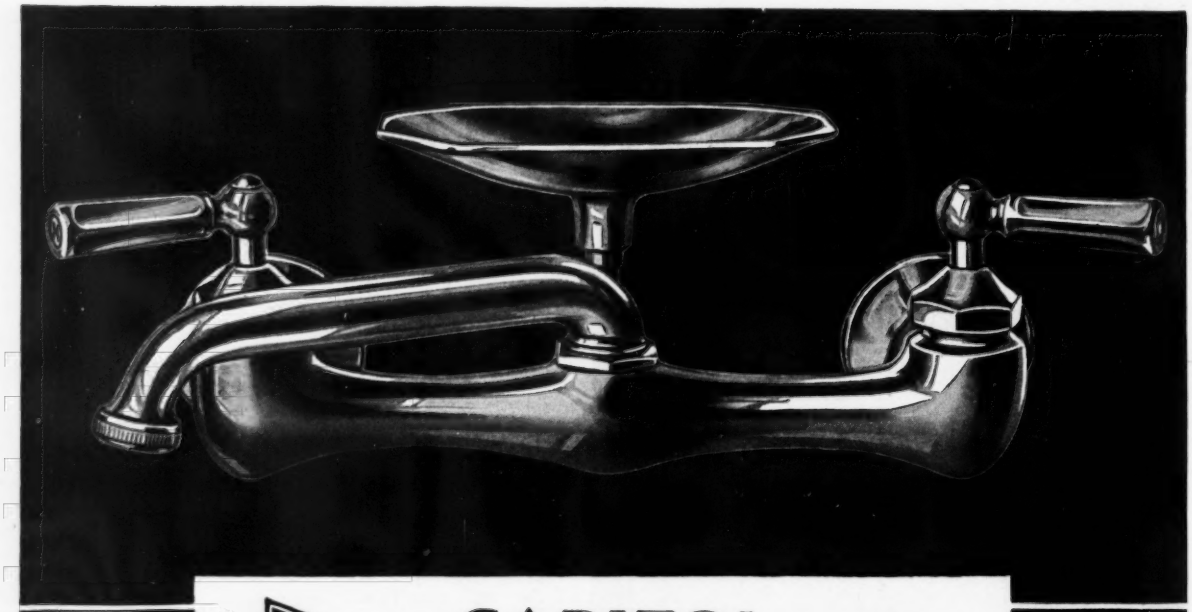
Trupar Manufacturing Co.
200 Davis Avenue,
Dayton, Ohio

Without further obligation on my part, please send me full particulars about the new 1931 Mayflower Electric Refrigerator.

Name _____

Address _____

_____



CAPITOL BOHN-910 SINK FIXTURE

Here is a sink fixture that combines utmost utility with rare good looks—worthy of a place in the finest home.

It is obtainable in two types. In chrome-plate with china soap dish and china handles, or in chrome-plate with metal soap dish and metal handles.

Both are made with 8" centers and are obtainable at the same price with either female eccentric, or male adjustable couplings.

They are precision-made throughout and in keeping with those manufacturing standards which distinguish the entire Capitol line.

Displayed and furnished by the better plumbing supply houses and plumbing contractors throughout the country. If there is not a dealer near you, write to us.

Bohn Aluminum & Brass Corporation

CAPITOL BRASS DIVISION

MANUFACTURERS OF BRASS VALVES, BOILER TRIMMINGS AND PLUMBERS' BRASS GOODS

DETROIT~MICHIGAN

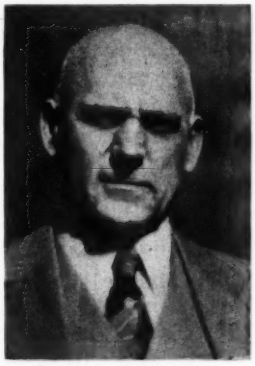
THE TRADE

News of Plumbing and Heating Contractors

Indiana Selects March 9 to 11 for Annual Convention

The Indiana Society of Sanitary Engineers will hold its annual convention at Indianapolis, March 9, 10 and 11, 1931, according to word just received from Max Baker of Muncie, state secretary. Earl L. Clevenger, also of Muncie, is president of the state organization.

Frank Irish, president of the Indianapolis local association and George T. Watson, secretary of that organization, are in charge of arrangements for the convention. Mr. Irish is a past president of the Indiana Society of Sanitary Engineers, and an active member.



Earl L. Clevenger

◆

Asks Support of Capper-Kelly Bill

At the recent convention of the National Association of Master Plumbers, held in Boston, Mass., a resolution was adopted known as Resolution No. 14, favoring the Capper-Kelly Fair Trade Bill. The purpose of this bill is to compel the retailer to sell at the price fixed by the manufacturer and is called the "Resale Price Bill." The bill is expected to come before Congress at this session.

In a recent letter to state and local secretaries, Martin W. Utz of Rochester, N. Y., chairman of the conference committee, National Association of Master Plumbers, requests association members to get in touch with their Congressmen in their respective districts, and urge the passage of the bill.

◆

Buffalo Association Moves Headquarters

The Master Plumbers' Association of Buffalo, N. Y., will move its office headquarters on January 1, 1931, to the Root Building 70-86 West Chippewa street, near Delaware avenue. The association offices will be in room No. 53. Christian H. Brenner is president of the Buffalo association, and William G. Maurer, secretary.

◆

San Francisco Association Re-elects Officers

On December 5, members of the Master Plumbers' Association of San Francisco, Calif., met at their headquarters, 120 Page street, and elected their board of directors for 1931. With the exception of Frank Sasso, who is succeeded by Roy Murray, the personnel of the directing board remains the same. In accordance with the by-laws of the organization, the new board met December 12 and chose their 1930 officers to head the activities for another year.

The officers are: J. V. Young, president; Charles

Members of the Scholarship Committee, N. A. M. P.

Samuel F. Wilson, Newark, N. J.

George H. Drake, Buffalo, N. Y.

John J. Vogelpohl, Cincinnati, O., chairman

John J. Calnan, Chicago

Richard J. Welch, Lowell, Mass.

Mayer, vice president; Alexander Coleman, treasurer; Jack Camp, corporation secretary. In addition to the above, the directorate is made up of the following: William J. Monihan, A. G. Trezise, William P. Goss, Roy Murray, Charles Noury, Louis Bernstein, V. J. Petersen, S. J. Divecchio, Joseph Rohr, N. J. Cohen and James H. Pinkerton.

◆

Oklahoma Masters to Hold Convention

The Oklahoma State Association of Master Plumbers will hold its convention on April 6 and 7, 1931, at Oklahoma City. Headquarters for the convention will be selected later. Officers of the association are: J. J. Cosgrove, Oklahoma City, president; Glen Watt, Tulsa, vice president; William Damon, secretary; William F. Black, Enid, treasurer. Members of the board of governors are as follows: Edward Deterlie, Ponca City; W. O. Heizer, Tulsa; S. G. Russell, Oklahoma City; T. D. Adams, Shawnee; John McDonnell, Oklahoma City; H. O. Green, Tulsa; W. J. Casemore, Ponca City; and the officers of the association. Edward Deterlie is zone governor of the northwest district; W. O. Heizer, northeast district; S. G. Russell, southwest district; T. D. Adams, southeast district.

J. J. Cosgrove

◆

Wisconsin State Convention Plans Near Completion

Plans have practically been completed at Milwaukee for the 37th annual convention of the Wisconsin Master Plumbers Association, scheduled to take place January 13, 14 and 15 at the New Pfister Hotel. The sessions will open on Tuesday morning, January 13, under the chairmanship of W. W. Dusold, president of the Milwaukee Master Plumbers Association. The early morning session will consist of a routine business meeting, with committee appointments announced, the introduction of resolutions and the memorial rites for departed members, according to present tentative arrangements.

Tuesday afternoon Mayor Daniel W. Hoan of Milwaukee will welcome the delegates, and visitors will be introduced. Speakers at the session will include F. M. Dawson, professor of hydraulic and sanitary engineering at the University of Wisconsin, R. H. Mattison, executive secretary, National Exhibits Committee, and C. J. Marsh, field secretary and counsel, Wisconsin Master Plumbers Association. The report of the national director and brief talks by representatives of visiting state associations will complete the afternoon program.

On Wednesday morning addresses will be given by G. W. Wray, on "Standardization of Plumbing Equipment," and George P. Hambrecht, director of the Wisconsin State Board of Vocational Education, followed by round-table discussion. Officers' reports and the report of the nominating committee will be read at this time also.

Frank R. King, director of the Bureau of Plumbing and Domestic Sanitary Engineering, Wisconsin State Board of Health, and Walter Simon, supervisor of apprenticeship, Wisconsin Industrial Commission, will appear as speakers at the session on Wednesday afternoon. Round-table discussion will comprise the business of the afternoon, until 4 p. m., when policyholders of the Master Plumbers' Limited Mutual Liability Company will adjourn to attend the annual meeting.

A business session will be held on Thursday morning, followed by discussions of matters pertaining to the plumbing business. The Utility law amendment will be a subject for extensive round-table discussion at this time, according to plans.

On Thursday afternoon, T. W. Merryman will give a short talk on "Certified Plumbing" and a film picture, "Arteries of Industry," will be shown. An address during the showing of the film will discuss "Corrosion in Plumbing Systems, Causes and Preventative Measures."

The program arranged for the ladies by the Ladies' Auxiliary of the Milwaukee Master Plumbers' Association has not yet been announced, but arrangements are being made for extensive entertainment during the convention. The annual dinner-dance of the organization will take place at the close of the convention on Thursday evening, in the Fern room at the New Pfister Hotel, and will close both the ladies' and men's program of business and entertainment.

◆

West Virginia Convention to be Held Feb. 2 and 3

The Master Plumbers Association of West Virginia has selected February 2 and 3, 1931, as the dates for its annual convention, according to word just received from C. V. Swann of Huntington, secretary of the state association. The convention will be held at Parkersburg, with headquarters at the Chancelor hotel. R. H. Holtzworth of Huntington is president of the association. S. C. Johnson of Parkersburg is chairman of the convention committee.

R. H. Holtzworth

◆

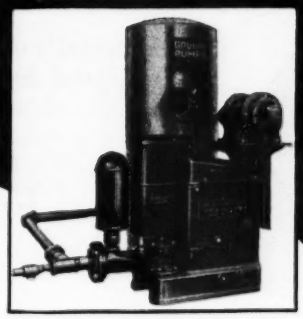
Plans Completed for Presidents' and Secretaries' Conference

Regional Management Conferences and the organization of sales and business management schools will be the chief topics for discussion at the ninth annual Presidents' and Secretaries' Conference, to be held under the auspices of the Plumbing and Heating Industries Bureau at the Congress hotel, Chicago, January 5, 6 and 7, 1931.

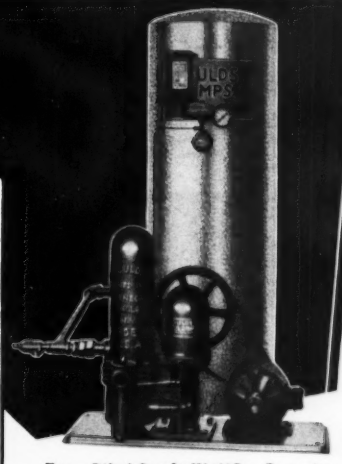
With the board of directors of the National Association of Master Plumbers meeting in Chicago at the same time and attending many of the sessions of the Presidents' and Secretaries' Conference, the meeting this year is expected to be unusually helpful.

An entire day will be given over to the Regional

SELL Water Under Pressure and increase your business



Deep-Well Outfit No. 7828 CAT., with automatic-oiling head.



Ever-Oiled Outfit W-405. Capacity 420 gal. per hr. ½-H.P. motor.

YOUR suburban and rural customers are interested not so much in "water systems" as in "water under pressure" — obtained easily and cheaply without trouble or unnecessary labor.

That is what you sell with every Goulds Water System. And with every sale, you open up a profitable market for plumbing fixtures.

THE EVER-OILED LINE FOR SHALLOW WELLS

12 sizes and styles.
Pumps permanently lubricated and guaranteed for two years.
Automatic starting and stopping.
Pump equipped with ball bearings.
For open-tank or pressure systems.

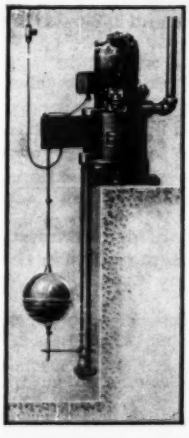
Write for Catalogue 17

THE AUTOMATIC-OILING LINE

50 different outfits for deep-well service.
V-belt, silent chain, or flat-belt drive.
4-in., 6-in., or 8-in. stroke.
Single- or double-acting cylinders.
All bearings bathed in continuous flood of oil by Gear Mesh Lubricator. (Patent Pending.) Tightly enclosed crank case holds six months' supply of oil.
Shock and wear minimized by air chamber which acts as shock absorber.
Smooth, even flow of water obtained by differential plunger.

Write for Catalogue 18

The Minute Man Cellar Drainer Keeps Cellars Dry



Complete outfit includes ½-h.p. motor; 8-ft. lamp cord; circuit breaker; foot valve; 3-ft. suction pipe; float switch. Capacity, 5 to 25 g.p.m.

This is the Cellar-Drainer Season

THIS is the time when many of your customers need cellar drainers. You can enjoy a profitable business by showing them how effectively the Goulds "1776 Minute Man" Cellar Drainer keeps their cellars dry.

The Minute Man is fully automatic. Shaft is fully enclosed and packed in grease. Self-priming centrifugal pump with bronze impeller and stainless steel shaft. Attractively finished in bronze and black.

GOULDS PUMPS, INC.
Seneca Falls, N. Y.

GOULDS PUMPS

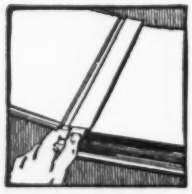
THE HANDY SPEEDLOK
Domestic Engineering Catalog Binder

Especially designed for the standardized catalog page adopted by the plumbing and heating industries

The SPEEDLOK is a quick operating catalog binder designed to fit reprints of catalog pages in "Domestic Engineering Plumbing and Heating Catalog" as well as all other catalog pages that conform to the standards adopted by the plumbing and heating industries.

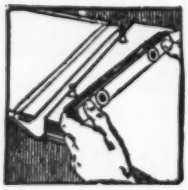
Easy and speedy operation are special features of this binder. A slight pull on the concealed bar under the top cover unlocks mechanism when sheets are inserted. Equipped with bar for removing sheets when changes are made.

Minimum capacity 1¼ inches. By simply unscrewing extension posts capacity can be extended to 2¼ inches. Works perfectly for all requirements—either a few sheets or filled to capacity.



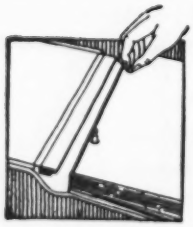
Covers are bound in heavy black Levant Grained Fabricoid, semi-flexible, very durable and attractive looking.

To unlock Binder—Pull out slide bar in top wing. Top cover will immediately fall back.



To lock Binder—bring top wing back over the posts—be sure posts fit in the holes in the top wing — then push in slide bar.

Separate the sheets where desired and slip sheets off the posts. Take out sheets or put in new ones as desired. These three moves take but a few seconds. Each operation is a natural one.



To increase or to decrease the capacity of the binder is a simple operation. The two posts are so constructed that they can be easily raised or lowered to meet the height requirements. Binder posts can be extended from 1¼ inches to 2¼ inches.

Plain White 16 lb. Bond Sheets Punched to Fit Speedlok Binder

Quantity	100	500	1000
Price	$1.00	$3.00	$5.50

Prices for larger quantities quoted on application.

For Plumbing and Heating Contractors—

Many master plumbers and steamfitters assemble working catalogs from standardized catalog sheets filed in binders.

Domestic Engineering is in position to furnish without charge, upon request, loose sheets—which are reprints from catalog pages appearing in "Domestic Engineering Plumbing and Heating Catalog"—of several hundred manufacturers. They are standard catalog page size—10⅝ x 8½ inches — are printed on a good grade of light paper and punched according to the standard adopted by the plumbing and heating industries. These sheets fit the SPEEDLOK binder.

For Jobbers' Salesmen—

The loose-leaf system reduces to the minimum the bulk and weight of catalog material required by the salesman. Only matter actually required for selling purposes need be carried in the binder. It does away with the necessity of carrying entire catalogs, booklets and circulars of various sizes and shapes.

Salesmen using the loose-leaf system have a great advantage over men not using this equipment — to say nothing of the added convenience, time and labor-saving features.

With a modernly equipped loose-leaf binder, the salesman can present his products in a more comprehensive manner than it is possible to accomplish by the old methods. Having all his material up to date in compact form and easily available, he can show latest specifications, answer questions or quote prices more readily.

When orders for binders are accompanied by requests for catalog reprints the binders will be equipped with the sheets desired and shipped complete.

Write for full details regarding loose sheets and binders.

Price of binder—$3.00. Prices on quantities on application.

DOMESTIC ENGINEERING

1900 Prairie Avenue *(Catalog Department)* **Chicago, Illinois**

Management Conference, for the benefit of those who have not witnessed the staging of these conferences.

Harnessing and perpetuating the enthusiasm generated by the Regional Management Conference by means of association schools for the teaching of salesmanship and business management will be another important subject for discussion. Salesmanship schools are now under way in at least four cities and secretaries will engage in a discussion of the possibilities in these schools.

Another important discussion topic will be that of the organization of advisory boards made up of heating contractors, plumbing contractors, wholesalers' representatives, and manufacturers' representatives. The organization of these boards in some cities following the Regional Management Conference is one of the most practical ways of perpetuating the benefits of the conference.

State aid for bookkeeping classes will be another topic that will be presented for discussion. As has been customary at the last three conferences, each secretary will report on the outstanding activity in which his association has engaged during the year.

George H. Drake, of Buffalo, N. Y., president of the National Association of Master Plumbers and president of the bureau, will preside at one of the meetings and Walter Klie, of Cleveland, Ohio, president of the Heating and Piping Contractors National Association and chairman of the bureau's executive committee, will preside at another session.

A block of rooms has been reserved for delegates at the Congress hotel, but all those expecting to attend are, nevertheless, urged to make their reservations for hotel space immediately. There will be no registration fee for the conference.

◆

Buffalo Masters Hold Dinner

The Master Plumbers' Association of Buffalo, N. Y., held a meeting on Thursday evening, December 11, at Gandy's, 199 Delaware avenue. W. Edmond Stradling of Utica, N. Y., president of the New York State Association; Ray Ehrsam of Utica, secretary of the New York state association, and William H. Ambrose of Philadelphia, past president of the Pennsylvania state association, addressed the meeting. August Ebke, chairman of the committee for the testimonial dinner to be given in honor of National President George H. Drake and Secretary George W. Frank reported progress made in the arrangements for the affair.

◆

Salt Lake City Association Elects New President

Henry H. Bockholt, past president of the Utah State Plumbing and Heating Contractors Association and a member of the board of governors of the Plumbing and Heating Contractors Association of Salt Lake City, will serve as president of the latter organization during 1931, according to W. A. Rupea, executive-secretary of both organizations.

The other officers chosen at the annual election on December 4 are: Marshall Erickson, vice-president; Elliot Westphal, secretary; Joseph F. Carthey, treasurer; Simon Gentner, sergeant-at-arms. Board of trustees:

Sylphon TRADE MARK

Meade and Hamilton — Architects; John Paul Jones — Engineer; The Smith & Oby Co. — Plumbing and Heating Contractors.
A. D. Porter — Our Representative 320 Plymouth Bldg.

This Superb CLEVELAND CLUB

"Beautiful, ultra modern—magnificent," say those who view the new Cleveland Club Building at East 107th and Carnegie Avenue.

"And scientifically complete" add those architects, engineers and contractors who know the matchless efficiencies and economies of Sylphon temperature and pressure control instruments.

Sylphon No. 930 and No. 932 Regulators control the temperatures of Storage Heaters and the Swimming Pool Water—and Sylphon No. 932-Z Regulators control the temperature of the brine cooled drinking water system. There are 186 Sylphon Packless Expansion Joints on the heating pipe risers. They are steam tight now, and will be many years from today.

Leading architects specify and engineers endorse Sylphon Temperature and pressure control instruments as the most practical and satisfactory equipment known.

Years of uninterrupted satisfactory service in thousands of homes, factories, office, school and public buildings have won for Sylphon Instruments, a widespread professional and general approval not attained by any others.

FULTON SYLPHON Co.
KNOXVILLE, TENN., U.S.A.

Representatives in all Principal Cities in U. S. A.—European Representatives, Crosby Valve and Eng. Co., Ltd., 41-2 Foley St., London, W. 1., Eng., Canadian Representatives, Darling Bros., Ltd., 140 Prince St., Montreal, Que., Canada

Will Rees, E. G. Harris, Joseph F. Carthey. The board of directors will be appointed by the president.

Prospects for the coming year are very favorable, according to Mr. Rupea. He met recently with the mayor and commissioners of Ogden, Utah's second largest city, in regard to the proposed changes in the plumbing ordinance. He states that the commission has promised full co-operation in the matter, which will again come up after the first of the year.

◆

Milwaukee Elects Officers—Prepares for National Convention

Walter W. Dusold, prominent Milwaukee plumbing and heating contractor, has been re-elected president of the Milwaukee Master Plumbers Association for a fourth consecutive term. The election of officers took place on December 16 at the Builders' Exchange, Milwaukee, Wis. Mr. Dusold has been holding office continuously since 1927. He served two terms as president of the Milwaukee Association 15 years ago.

All other officers were re-elected also, including H. C. Weber, vice president; A. F. Boettcher, secretary, and Peter Vogt, treasurer. President Dusold re-appointed H. A. Wegner as sergeant-at-arms.

Directors for the ensuing year were elected as follows: David Stern, Charles Pelunek, Joseph Wittig, Jacob Shuh, Joseph Brah, Walter Tesch, L. R. Schmaus, A. A. Hoffmann, C. Priegel, O. A. Waskow, and G. C. Block.

The officers will be installed at the first meeting in January, at which time President Dusold will announce his standing committees.

The Milwaukee association is already preparing to handle the entertainment features for the coming convention of the National Association of Master Plumbers to be held in that city in June of next year. Committee chairmen for the national convention arrangements have been appointed as follows:

Reception committee, W. W. Dusold; Registration committee, Joseph Brah; Exhibit committee, David Stern; Hotel committee, L. R. Schmaus; Music and entertainment, A. A. Hoffmann; Automobile and transportation, A. F. Boettcher; Joint Auxiliary committee, George Soergel; County fair committee, H. C. Weber; Heidelberg night committee, Walter Tesch; Badge committee, Erwin Knauer; Press and publicity committee, Edward Trebs; and Sales promotion committee, Peter Vogt.

President Dusold will call a general meeting of the committee chairmen in the near future to select the personnel of the various committees.

◆

"Secretary's Manual" Issued by Plumbing and Heating Industries Bureau

The Plumbing and Heating Industries Bureau has just published a new "Secretary's Manual" for plumbing and heating associations. Detailed methods for specific local association programs are emphasized. The new manual has been placed in the hands of more than 425 executives of state, zone and local contractor groups of the industries. It is bound in limp leather of pocket size, and is loose-leaf to permit supplements and revision. Preparation of the manual as published has covered a

Write for complete Keystone Pottery Products Catalog

The
CHESTER
Vitreous China Lavatory
Newest in Design — Beauty — Convenience

Even a quick glance will show you that the unusualness of The Chester will make it a great seller. No accessory holders for the customer to buy or bother over — they're all BUILT IN. Another feature is the FRONT OVERFLOW. Because of this the basin only extends 15 inches from the wall, yet allows a full inside basin size of 10x15½ in.

Can be furnished without tooth brush openings if desired.

Keystone Pottery Products

KEYSTONE POTTERY CO.
Trenton :: New Jersey

Left to right: Ray Bixby, president of Omaha association; G. W. Artman, Crane Co., Omaha; A. L. Willding, Glauber Brass Co., Cleveland; C. E. Costello, Lincoln. Photos taken at the convention of the Nebraska Retail Plumbers' Association

period of three years, according to the announcement of the Bureau. Technique for market surveys and other phases of association activity is based on three classifications of cities, while material for co-operative advertising and for sales classes has been tested by the Bureau.

The manual contains sections outlining the form of state and regional organizations, and a section devoted to the qualifications and selection of association officers. Detailed program material for specific association programs is organized on the basis of a hypothetical sale. Methods for making shop surveys to secure reliable information as to membership of the association are discussed, and section five of the manual is devoted to a detailed discussion of ways to use in carrying out specific association purposes. The structure of such subsidiary association organizations as credit and collection bureaus and employment offices is modeled after practical plans in effective use in the industries. The Philadelphia Labor Bureau is used as a model for association employment bureaus, and the credit and collection service follows, in outline, the Minneapolis credit and collection organization.

◆

Manhattan Masters to Hold Party Jan. 23

Arrangements have been made by the Manhattan Master Plumbers' Association to hold its annual entertainment and dance on January 23, 1931, at the Level Club, New York City. Joseph R. Spellman, chairman of the committee in charge, is being assisted by Henry Berg, Herbert Halloran, Andrew I. Green, Nathan Weinstein, Simon Solomon, Ellis Jungman, Harry Segel, Malcolm Walsh and Michael Cregan. Miss Marion F. Taylor, office secretary of the association, is treasurer of the affair.

◆

Death of John G. Midgley

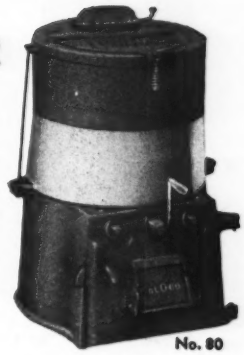
John G. Midgley, veteran heating and ventilating engineer of Salt Lake City, Utah, died recently at the family residence, following an operation. Mr. Midgley was in his 75th year. He was born in Salt Lake City and was one of the first heating and ventilating engineers in the intermountain country. He maintained offices in the Dooly building. Surviving him are his widow and six children.

◆

Now in New Location

Mensing and Company, industrial engineers of Philadelphia, Pa., have moved to 1520 Locust street.

A TANK HEATER FOR ANY STANDARD SIZE TANK—OR NUMBER OF FAMILIES



No. 80

45 different sizes to pick from

The most thoroughly satisfactory method known of heating hot water at low cost is the coal tank heater. And in all tank heater history there has been nothing to approach, in completeness of line and all-around satisfaction, the GLOCO Red Band Tank Heaters.

Tested to 300 pounds—guaranteed to 125 pounds working pressure.

Ask your Wholesaler

EVINS F. GLORE & SON, Inc.

Grand Central Terminal Bldg. New York City

"LOOK FOR THE RED BAND OF QUALITY"

TRADE MARK

GLOCO

RED BAND TANK HEATERS

To be sure of an entirely Modern Bathroom install

SHERWOOD Ball Cocks

No bathroom, no matter how beautiful and expensive the fixtures, can ever be accounted a *modern* bathroom if it has a noisy, leaky ball cock.

The hundreds of dollars that go into the making of a bathroom that is beautiful to the eye might just as well be spent in some other direction if the owner is going to be dissatisfied with the performance of so "small" an item as the ball cock.

You want your bathrooms to be credits to your workmanship, your ability and your knowledge of the correct thing to use. You can be sure that every bathroom you equip with a Sherwood Ball Cock will always be a bathroom where leaks, noise and whistles in the tank will never be known.

Sherwood Ball Cocks are guaranteed against leaks and they will close against any city water pressure without whistling or gurgling.

They can be furnished with any length shank desired. Your jobber either stocks Sherwoods or can get immediate delivery from the factory.

Insist upon Sherwoods for your own and your customer's satisfaction.

SHERWOOD BRASS WORKS

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Fred B. Wilsey, Plymouth Bldg., Minneapolis

The Regional Management Conference held under the auspices of the Cincinnati Master Plumbers' Association, and directed by the Plumbing and Heating Industries Bureau, at the Scottish Rite Auditorium, Cincinnati

Bureau Conferences Draw Big Crowds in Ohio

MASTER plumbers, heating contractors, their wives, office employes, journeymen and steamfitters, wholesalers and salesmen and manufacturers' representatives, numbering 1,007, attended two Regional Management Conferences in southern Ohio in December.

The two conferences were held in Cincinnati and Dayton. The Cincinnati conference was held on December 5 at the Scottish Rite Auditorium, with an attendance of 656. The Dayton conference was held on December 4, and the attendance was 351.

Both conferences were directed by Joseph G. Hildebrand of the Plumbing and Heating Industries Bureau, Chicago, and the Cincinnati Conference was the fourteenth of its kind directed by Mr. Hildebrand since he undertook this work for the bureau in July.

The Cincinnati Conference was the largest that has so far been held, its nearest rivals in point of attendance being Indianapolis with 425 paid admissions, and Minneapolis with 375.

With a total attendance for the fourteen conferences of nearly four thousand paid admissions, the Regional Management Conferences have become one of the most important educational efforts that have ever been made in any industry in which the education of the retailer is a vital factor. Other industries are watching with great interest the pioneering work of the Plumbing and Heating Industries Bureau, working in co-operation with the various local associations of contractors.

The success of the conferences not only proves that the plumbing and heating contractor is eager for education, provided it is practical and interesting, but also proves that all branches of the industry will co-operate in a local educational program if it gives reasonable promise of success.

Master plumbers came from three states to attend the Cincinnati conference. There was a considerable delegation of Kentucky contractors and also a large number of contractors from eastern Indiana, some of whom had been unable to attend the Indianapolis meeting. Several of the Indiana contractors who came to the Dayton meeting had attended the Indianapolis conference, but were so interested in the sales demonstrations that they wished to see them again. One Indiana contractor who had attended the Indianapolis meeting brought all of his journeymen to the Dayton conference. Thirty-four Hamilton, Ohio, contractors chartered a bus and came to the Cincinnati meeting.

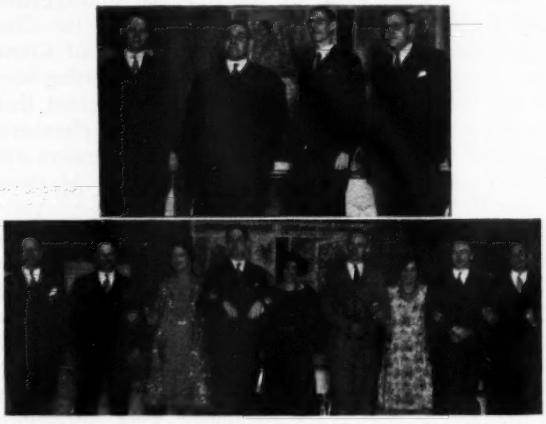
Both the Cincinnati and Dayton conferences began with a banquet at six o'clock. The dramatized sales demonstrations began at eight o'clock. Like previous conferences, the program opened with a prologue demonstrating the proper business use of the telephone. Employes of the Ohio Bell Telephone Company gave this demonstration. Act 1, "The City Plumbing Company," followed. This play shows the effect of the introduction of new and progressive ideas in an old plumbing establishment. The characters are an office girl, Mrs. Consumer, the journeyman, the salesman, and the master plumber.

Act. 2 consists of a

A partial view of those attending the Regional Management Conference in the Dayton Industrial Building, Dayton, Ohio

number of short sales demonstrations—"Selling an Electric Dishwasher," "Partners?" "Trying to Get the Extra One Hundred Dollars," and "A Master Sale."

The cast for the play and for the sales demonstration was as follows: Mr. Fisher of the Woodward-Wanger Co., Philadelphia; Mr. Van Fleet of Crane Co. Indianapolis; Miss Virginia Kleine of Cincinnati; George Hench of the Standard Sanitary Mfg. Co., Indianapolis; Miss Barbara Tschan of Crane Co., Indianapolis; John Irvine of the Leader Specialty Co., Indianapolis; Mrs.



Top picture, left to right: Edward Kleine, Cincinnati; John Haas, Dayton; Frank Clemens, Dayton, and Joseph G. Hildebrand. Bottom picture: The cast which presented the dramatized sales demonstrations in Dayton and Cincinnati

Olivia Orth Anderson of the Wisconsin Players, Milwaukee; Mr. Ryan of the Kohler Co., Milwaukee; and John Brecht of the American Radiator Co., Cincinnati.

The Dayton meeting was sponsored by the Dayton Master Plumbers Association. Frank Clemens was chairman of the committee arranging for the conference. He was assisted by John Haas.

The Cincinnati meeting was sponsored by the Cincinnati Master Plumbers Association. Edward Frank, past president of the Ohio Master Plumbers Association, was chairman of the committee arranging for the conference. Mr. Frank, who has been a master plumber in Cincinnati for forty-one years, handled every detail incidental to the conference with great thoroughness and efficiency.

Among the Cincinnati contractors most active in assisting Mr. Frank were John J. Vogelpohl, past president of the National Association of Master Plumbers; Edward Kleine, a member of the board of directors of the National Association of Master Plumbers and vice-president of the Ohio state association; and John Dougherty, president of the Cincinnati Master Plumbers Association. Also assisting with the conference was A. Bachman, secretary of the Heating and Piping Contractors Cincinnati Association.

The fact that more than three hundred women were present at the Cincinnati conference was due largely to the active participation of the Women's Auxiliary of the Cincinnati Master Plumbers Association. A number of members of the auxiliary, under the direction of Mrs. Andrew Murphy, president, took special interest in stimulating attendance.

William H. Grabowsky of Canton, president of the

Dehn Protection Is Complete

Dehn protection means simply, engineering perfection. It means positive results and longest lasting service.

The PEERLESS Garage Drainage System is a Dehn product, designed for easy installation, perfect functioning and long life by George J. Dehn, S. E.

You may as well have Dehn equipment and satisfied customers because inferior equipment costs as much—and more—in the long run.

New Number Thirty Catalog illustrating and describing some new and improved appliances upon request. Your jobber can supply you.

"THERE ARE NO SUBSTITUTES EQUALLY AS GOOD."

COMPOUND INJECTOR & SPECIALTY CO.
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GEORGE J. DEHN, S. E., President

419-421 D N. Laramie Ave., Chicago, Illinois

Originators, Designers and Sole Manufacturers of

DEHNSANIGARD
THE QUALITY GOODS
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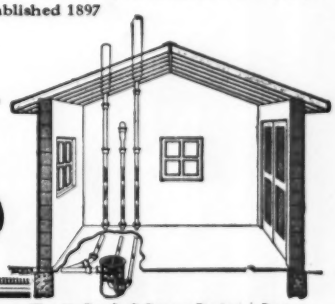


Fig. 62. PeerlesS Garage Drainage System correctly installed. Patented.

PRODUCTS BRASS TRENTON

NO DOUBT ABOUT IT!

Realization of the tremendous importance of installing the proper boiler coupling will lead you at once to Trenton Brass Boiler Couplings. They remove all doubt as to the superiority of your work.

TRENTON BRASS & MACHINE CO.
Trenton, New Jersey

Represented by ROLLIN C. WILSON
7 E. 42nd St., New York, N. Y. 261 Franklin St., Boston, Mass.
427 N. Broad St., Elizabeth, New Jersey

Every Merion Water Heater you sell is the basis for either another heater sale, because of the boost your customer will give you, or the sale of equipment. These merchandising features alone should be sufficient to convince you to handle Merion Heaters but coupled to them is a low price that cannot help but increase sales.

Write for details.

JOHN WOOD MFG. COMPANY
CONSHOHOCKEN PENNSYLVANIA

Ohio Master Plumbers Association, attended the Cincinnati meeting.

At the conclusion of the Dayton meeting, Edward Kleine spoke briefly on the value of membership in the National Association of Master Plumbers. Membership in the National Association is more important today than ever before in the history of the plumbing industry, Mr. Kleine pointed out. He described the National Association of Master Plumbers as the line of defense protecting the retail branch of the industry.

Enthusiastic approval of the Regional Management Conference was voiced at the conclusion of the Cincinnati meeting by George J. Jones, manager of Crane Co., Cincinnati. Mr. Jones told in an interesting way his reaction to the evening's program. He said that wholesalers are well aware of the fact that the plumbers' problems are their problems and that wholesalers are eager to assist the plumber in the solution of these problems.

Beautiful bouquets were given to the women of the cast as a token of appreciation by the Cincinnati Master Plumbers Association. Edward Kleine presented a bouquet to Miss Barbara Tschan; John J. Vogelpohl presented a bouquet to Miss Virginia Kleine and Edward Frank presented a bouquet to Mrs. Anderson.

After the conference adjourned, all of the members of the cast, as well as the committee, were entertained at the home of Mr. and Mrs. John J. Vogelpohl.

◆

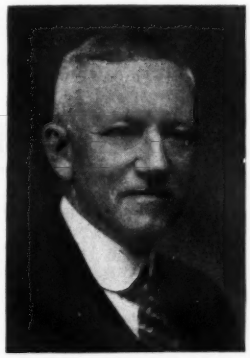
National Director Asks for Opinions on Central Office

Addressing the Pipe Club of the Master Plumbers' Association of North Hudson, N. J., holding its first 1930-1931 dinner meeting jointly with the regular meeting of that organization on December 1 at the Capitol restaurant, Union City, N. J., National Director George H. Werner of Orange, N. J., who is also state treasurer, asked that the North Hudson members indicate to him before the next national board meeting in January their opinions regarding the establishment of a permanent national office at Washington, D. C. The national director enumerated some of the national offices of other organizations that are now in that city and said that, following the death of the late National President John A. Quinn of Philadelphia, where the association office was located, it was found by President George H. Drake of Buffalo, N. Y., who was at that time acting president, that national affairs could be readily handled with the president living in a city distant from that in which the headquarters of the association were located.

After stating that he would like to talk to men who do not read trade papers to point out to them their tremendous educational value, National Director Werner told the wholesale men present that many of their number are injuring the master plumber by being too free with credit, thus putting the man lax in business conduct on a plane with those who are conducting their businesses properly. He explained to the master plumbers the advantages to be gained by doing business with wholesalers who conduct their organizations in a business-like way.

Ira H. Morris, executive secretary of the Newark

association, expressed the opinion that there would be less objection to the establishment of a national office if the fact that proper men would be placed in charge could be assured. Mr. Morris, describing the psychology of selling, said that a master plumber can get that price for his work that he truly believes is fair. He urged the contractors to avail themselves of the service the Newark association offers in the way of a complete, accurate, property search at a lower cost than is available elsewhere.



George H. Werner

Herman E. Baumgartner, president of the Newark association, in a talk, said, "It has been my experience that business can not be increased through lowering prices on materials and by offering services free, because most of the work available now has to be done and regardless of how low you go there will always be some one who will go lower." He urged the members to sell their customers the idea of quality material and workmanship. Concerning manufacturers, he said that their general advertising creates in the minds of the public the desire for modern plumbing and heating equipment but it does not always tell the public it should buy from licensed and bonded master plumbers to insure proper installation. The manufacturer's attitude generally in advertising, he said, is that he is selling a finished product, which is not the case, as it is not finished until it is properly installed.

William T. J. Orriss of Union City, N. J., former state president, expressed the opinion that the so-called depression in business is more a state of mind than anything else. He was substantiated in this by a number of others who spoke. These were State Trustee Edward J. Geyer of Bergenfield and secretary of the Englewood Association; William W. Harms of Englewood, president of that local organization, and Clyde C. Cole of Weehauken, secretary of the club.

Edward B. Moore, state organizer, speaking on the work he is doing, said that he expects to spend the greater part of the month in the North Hudson territory.

George Buess of Union City, president of the North Hudson association, presided at the meeting.

◆

Sioux Falls Association Elects Officers

The Sioux Falls Retail Plumbers' Association held its annual election of officers on December 10, the following being selected to head the association during the coming year: C. Emil Carlson, president; James Ferris, vice president; E. W. Dow, secretary-treasurer. The retiring officers were Clifford F. Smith, president; Charles McGovern, vice president; and Rhea Reese, secretary-treasurer.

The new vice president, James Ferris, came to Sioux

"WHAT PRICE GLORY"

WITHOUT A

BRADFORD PRICE BOOK

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PAGE No. 119 (27th) Revised to October 17, 1930

BRASS FITTINGS—I. P. S.—Malleable Pattern.
ELBOWS—90°

	Size	⅛″	¼″	⅜″	½″	¾″	1″	1¼″	1½″	2″	2½″	3″	3½″	4″
ROUGH	List	.12	.15	.20	.28	.40	.63	.90	1.20	2.00	3.50	6.00	8.00	10.00
	Net													
	Net	.00	.00	.00	.00	.00	.00	.00	.00	.00	0.00	0.00	0.00	0.00
	Sell	.xx	.xx	.xx	.xx	.xx	.xx	.xx	.xx	.xx	x.xx	x.xx	x.xx	x.xx
FINISH	List	.30	.35	.45	.56	.75	1.10	1.55	2.00	3.00	5.55	2.00	14.00	17.50
	Net													
	Net	.00	.00	.00	.00	.00	.00	.00	.00	0.00	0.00	0.00	0.00	0.00
	Sell	.xx	.xx	.xx	.xx	.xx	.xx	.xx	x.xx	x.xx	x.xx	x.xx	x.xx	x.xx
NICKEL	List	.36	.42	.53	.65	.87	1.25	1.75	2.25	3.35	6.15	10.00	16.00	20.00
	Net													
	Net	.00	.00	.00	.00	.00	.00	.00	.00	0.00				
	Sell	.xx	.xx	.xx	.xx	.xx	.xx	.xx	x.xx	x.xx				

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PRESSURE GOVERNOR
for Hot Water Heating Systems
—Reduces the cost of a hot water layout.
—Eliminates expansion tank and fittings (with its danger of freezing and overflowing).
—Simplifies installation—makes a better job.
—Saves your time and your customers' money.
—Increases your profits and builds good will.
Write us for full information.
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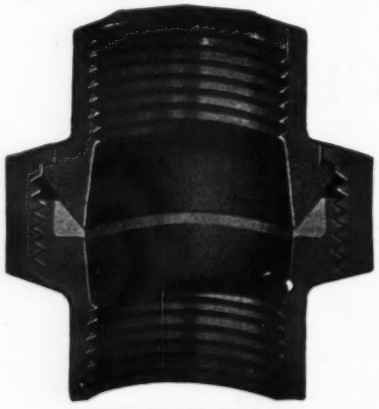
IMICO UNIONS



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Made of refined Malleable Iron with Brass Seat inserted in place by powerful pressure so that it cannot become detached.

Approved by Underwriters' Laboratories.

ILLINOIS MALLEABLE IRON CO.
Chicago, Ill.
Manufacturers Full Line Iron Pipe Fittings

Falls, recently, to take over the plumbing and heating business of his father, the late James Ferris, Sr. The younger Mr. Ferris had been engaged in the plumbing and heating business in Yankton, S. Dak., previous to returning to Sioux Falls.

E. W. Dow, the new secretary-treasurer, has been appointed as a paid secretary by the association. The association has opened an office at 206 Dakota block.

Convention Dates

January 7 and 8, 1931—SOUTH DAKOTA—The annual convention of the South Dakota Retail Plumbers' Association, to be held at Watertown, with headquarters at the Lincoln hotel.

January 13 to 15, 1931.—WISCONSIN—The annual convention of the Wisconsin Master Plumbers' Association, to be held at Milwaukee, with headquarters at the Hotel Pfister.

January 20, 21, and 22, 1931—ILLINOIS—The annual convention of the Illinois Master Plumbers' Association, to be held at Danville, with headquarters at the Wolford hotel.

January 26, 27, 28 and 29, 1931—A. S. H. V. E.—The annual meeting of the American Society of Heating and Ventilating Engineers, to be held at the William Penn Hotel, Pittsburgh.

February 2 and 3, 1931—WEST VIRGINIA—The annual convention of the Master Plumbers Association of West Virginia, to be held at Parkersburg, with headquarters at the Chancelor hotel.

February 3, 4 and 5, 1931—OHIO—Thirty-ninth annual convention of the Ohio State Association of Master Plumbers, to be held at Canton, Ohio.

March 9, 10 and 11, 1931—INDIANA—The annual convention of the Indiana Society of Sanitary Engineers, to be held at Indianapolis.

March 16 and 17, 1931—KANSAS—The annual convention of the Kansas Master Plumbers' Association, to be held in Iola, with headquarters at the Kelly hotel.

April 6 and 7, 1931—OKLAHOMA—The annual convention of the Oklahoma State Association of Master Plumbers, to be held at Oklahoma City. Headquarters to be decided later.

April 13 to 18, 1931—A. O. B. A.—The eighth annual convention and oil burner show of The American Oil Burner Association, to be held in Philadelphia, Pa., with convention headquarters at the Benjamin Franklin Hotel. The oil burner show will be held on the exhibit floor of the Gimbel Building.

April 21, 22 and 23, 1931—TEXAS—The annual convention of The Associated Master Plumbers of Texas, to be held at Houston at the Rice Hotel.

May 11, 12 and 13, 1931—N. P. S. A.—The convention of the National Pipe & Supplies Association to be held at Cleveland, Ohio, with headquarters at the Hotel Hollenden.

June 23, 24 and 25, 1931.—N. A. M. P.—The forty-ninth annual convention of the National Association of Master Plumbers, to be held at the Auditorium, Milwaukee, Wis., with headquarters at the Hotel Schroeder.

June 23 and 25, 1931.—N. A. M. P. AUXILIARY—The annual convention of the Women's Auxiliary to the National Association of Master Plumbers, to be held in the Hotel Schroeder.

COMING TRADE EVENTS

January 5, 6 and 7, 1931.—The ninth annual conference of presidents and secretaries of state and local master plumbers' associations, and of state and local heating and piping contractors' associations, to be held at the Congress Hotel, Chicago.

January 12, 1931.—The Wisconsin State Apprenticeship Conference to be held at the Hotel Pfister, Milwaukee, Wis.

February 9 to 20, 1931.—A short course in plumbing for master plumbers, plumbing instructors and plumbing inspectors, to be held in Madison, Wis., under the auspices of the Wisconsin Master Plumbers' Association.

February 10 to 14, 1931—The fifth Midwestern Engineering and Power Exposition, to be held at the Coliseum, Chicago.

June 22, 23, 24 and 25, 1931.—Exposition of plumbing, heating and allied products, in connection with the forty-ninth annual convention of the National Association of Master Plumbers, in the arena of the Auditorium, Milwaukee, Wis.

Questions?

ASKED BY READERS AND ANSWERED BY EXPERTS

About Water Supply for a Farm in Kansas

Editor, DOMESTIC ENGINEERING:—I am in need of assistance and wish you would give me some expert advice.

A farm here in Kansas is being developed into a homestead and they are unable to get water. The nearest supply is a good well in one corner of the farm, about 1,000 ft. from the building site and about 100 ft. lower than the building. The building is to house a family of four. The water supply must also take care of four horses, six cows and fifty hogs. The only resource is to run a pipe from the well to the house.

Now what I want to know is what size pipe I am to use. What size storage tank must I build? Can a windmill be put up at the house to draw the water up, or should it be in the ravine and force the water up hill? What kind of pump should I use? The ravine runs north and south with hills on both sides, so winds from east and west do not reach it. On the top of the hill there is always a fairly stiff wind.

To keep the pipes from freezing they will have to be run about 3 ft. underground, which is rock nearly all the way. What size windmill should I use? I have got to do this job at the least expense, therefore kindly give me your very best advice.

Kansas. W. W. C.

If there is electric service on the farm, that would no doubt be the most economical system to install. The pump and motor should be installed in a frostproof pit directly over the well, and it could be designed to operate either automatically or with a hand-controlled switch located at the house or any other convenient point.

If there is no electric service on the farm, a wind-operated system would in all probability be the best selection. The pump, however, must be located at the well. This requirement applies wherever the depth of the water is more than 20 ft. lower than the pump. The windmill may be located directly over the well, but to have it high enough to get the wind, it will need to have a very high tower, perhaps 80 ft. or more. To avoid using such a high tower, it may be possible to locate the windmill on the hill near the house and operate the pump at the well by means of quadrants connected with two heavy wires. The accompanying diagram, Fig. 1, suggests this arrangement.

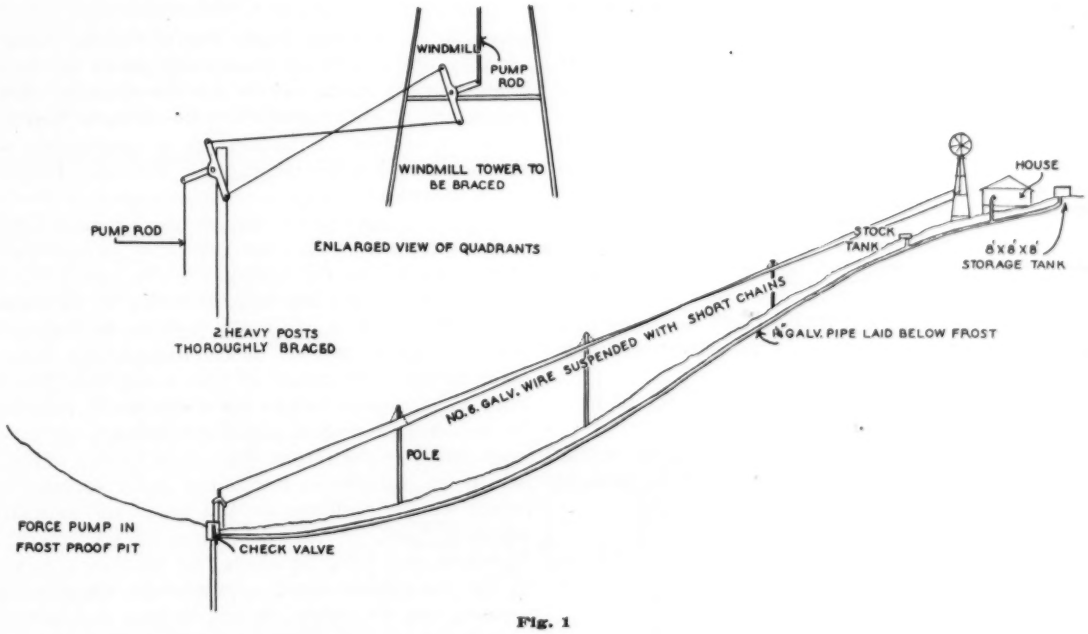

Fig. 1

The posts, to which the quadrants are attached at the well, must be very rigidly braced, and the same applies also to the quadrant at the well. The latter may be attached at the windmill tower, and the tower should be very thoroughly braced for that purpose. The wires must be tightly drawn and a turn-buckle may be used for that purpose. Due to the distance between the well

and the windmill several intermediate supports would be needed for the wires. Short lengths of chains may be used to suspend the wires at these supports.

The pipe from the well to the storage tank and barnyard should be 1¼-in. and laid far enough underground to avoid any possibility of freezing. To be entirely safe this should be about 3½ ft.

Where a windmill is used as power for pumping water there should be at least three days' storage to carry over periods of calm weather. To supply a family of four in addition to four horses, six cows and fifty hogs will require about 300 gallons of water per day. We would suggest a storage tank about 8 ft. square and 8 ft. deep for this farm.

By connecting the delivery pipe from the well to the bottom of the storage tank the same pipe will serve to return the water, when needed, to the house and the farmyard. A check valve should be installed in the delivery line near the pump.

Any kind of a force pump may be used at the well. The pump, of course, should be placed in a pit below ground to prevent freezing.

◆

About the Boiling of Water Under Vacuum

Editor, DOMESTIC ENGINEERING:—As a subscriber to your magazine I should like to ask you a question or two. The first one is that I would like to know at what degree water will boil when under a partial vacuum. This is because I know that ordinarily water boils at 212 deg. Fahr., and I seem to gather, from various information which I have come across, that a vacuum steam heating system is a very satisfactory method of heating if done properly. Therefore I am interested in knowing the boiling points of water when under various degrees of vacuum and, if all fittings, radiators and boilers are tight, how long will a system hold a vacuum?

The second matter is somewhat related to the first one and concerns a system of producing electricity. I have recently read that a man can boil water in a vacuum tank simply by causing warm or hot water to flow over the outside of the tank, and that it takes very little heat to boil water under a vacuum. Is this correct and how can it be done?

Massachusetts. C. E. D.

Our correspondent has raised some very interesting features in his questions and we will reply to them in order. His question concerning a vacuum system seems to be based on a misconception of the operation of a vacuum system of steam heating. A so-called vacuum system does not mean that a partial vacuum necessarily exists in the radiators; it does mean that a partial vacuum is carried on the return lines to assist in ridding the system of air and condensation as it accumulates.

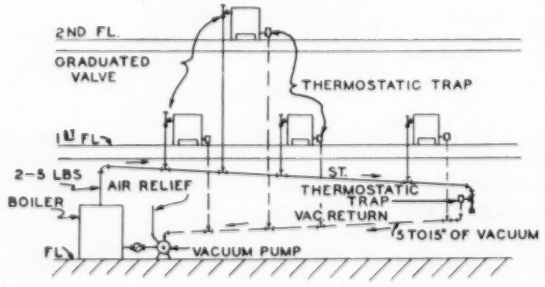

Fig. 1

Many vacuum steam heating systems, such as illustrated in Fig. 1, operate with a constant steam pressure of 2 lb. to 5 lb. gauge, on the radiators and supply line, and with a constant vacuum of, say, 5 in. to 15 in. on the return line. These two different pressures (the steam and the return) are separated normally by the thermostatic trap on the return end of the radiator or—if the radiator valve is closed off—by the closed radiator valve on the inlet of the radiator.

The operation of a vacuum system of steam heating may be outlined as follows:

Steam, at some pressure above the atmosphere, is

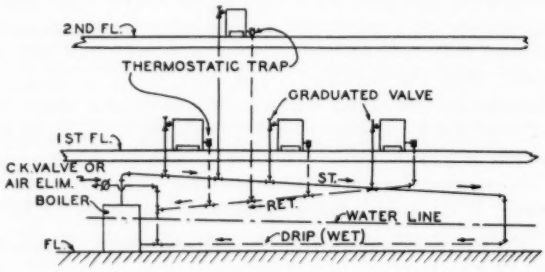

Fig. 2

generated in a steam boiler (or is secured from the exhaust pipe in a power plant) and passes out into the heating supply mains and up into the radiators. On the return end of each radiator is a thermostatic trap which closes on account of the increase in temperature when the steam strikes the thermostatic element. Hence the name thermostatic trap.

With this trap closed the steam is confined in the radiator until it reaches the full initial pressure of the steam supplied to the system less the pipe friction or pressure lost in the line while traveling to the radiator. From time to time condensate collects in the radiator and piles up in the inlet of the thermostatic trap. As soon as the temperature of this condensate has been reduced to a point where the thermostatic trap begins to open, the condensate passes out through the partially open trap into the return line. It is in this return line where the vacuum is maintained by a vacuum pump which handles both the air and water and maintains a constant "pull" or partial vacuum on the return line. It will be seen from the above that the thermostatic trap is the mechanism which prevents the steam pressure rushing into the return line and spoiling or breaking the vacuum.

If a radiator is shut off, it cools down and the trap opens as soon as the temperature in the radiator reaches a temperature low enough to cause the trap to begin to operate at which time the cooled contents in the radiator are withdrawn to a sufficient extent to make the vacuum on the radiator equal the vacuum in the return line. But, of course, this vacuum stops at the closed radiator valve which has steam pressure on the inlet side. There would be no way to produce a vacuum in the steam main and radiators of a vacuum system except by not pro-

ducing steam as fast as the system is condensing it in which case all the radiators would not receive steam and the traps on the cold radiators would open and let the vacuum back into the radiators, steam main and the other parts of the system. As this practice is not customary on regular vacuum systems, it will not be considered here.

In many types of vapor systems, however, it is possible to produce pressures below atmosphere or partial vacuums. See Fig. 2. This is done by first filling the system with steam and expelling all the air through a check valve or some type of air eliminator trap which does not permit the air to return. Then the fire is allowed to die down and the development of steam is reduced so that the radiators condense the steam more rapidly than it is formed. The result is a self induced partial vacuum throughout the system and the water in the boiler will boil and produce vapor at a lower temperature and with a lower fire than would be required if this partial vacuum did not exist. Vapor as used above simply means steam at a very low pressure at or below atmosphere.

Such systems have been found to carry a vacuum from a few hours to a period covering the entire day. Theoretically an absolutely air tight system would hold a vacuum indefinitely.

The boiling points of water corresponding to various vacuums is given in Table I where the first column shows the absolute pressure which is the pressure in pounds per square inch above a perfect vacuum. As the atmospheric pressure at sea level is about 14.7 lb. per sq. in. and as gauge pressure begins with zero at atmospheric pressure, it follows that all gauge pressures are 14.7 less than the corresponding absolute pressures.

Table I—Boiling Temperatures for Water Under Different Vacuums

Absolute Pressure Lb. per Sq. In.	Vacuum *In. of Mercury	Boiling Temperature Deg. Fahr.
½	28.4	79.70
1	27.4	101.76
2	25.4	126.10
3	23.4	141.49
4	21.4	152.99
5	19.4	162.25
6	17.4	170.07
7	15.4	176.85
8	13.4	182.87
9	11.4	188.28
10	9.4	193.21
11	7.4	197.77
12	5.4	201.96
13	3.4	205.88
14	1.4	209.56
14.7	0	212.00

*Based on 29.4 in. of mercury equalling atmospheric pressure.

When it is desired to express pressure below atmosphere (or below zero gauge pressure) either absolute pressures are used or—more commonly—inches of vacuum which are given in the second column of Table I. These inches of vacuum represent the height of a column of mercury which the given vacuum will support. Expressed in inches of mercury the ordinary atmospheric pressure corresponds to about 30 in. of mercury at sea level. If this atmospheric pressure is assumed to be 29.4 in. of mercury, it will be found that each 2 in. of vacuum = 1 lb.; atmospheric pressure grows less at higher alti-

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tudes. The last column of this table shows the boiling temperatures for the corresponding absolute pressures or inches of vacuum.

Now as to the last question, the system mentioned, is that developed by Georges Claude and takes cold water from the lower levels of the ocean and warm water from the surface, utilizing these in the equivalent of a boiler and condenser to develop electric energy in a steam turbine. Forty 500 watt lamps have been kept burning half an hour by this means, but with an investment of $2,000,000.

The explanation of this method of producing power as outlined by Mr. Claude, its inventor, is that water will boil under a comparatively low temperature when the vacuum is sufficiently high and will condense with a small decrease in temperature in the condenser and the difference in pressure may be used for producing power.

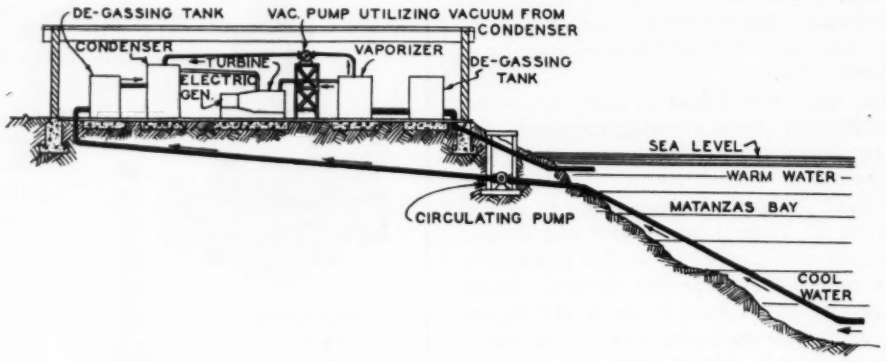

Fig. 3

Mr. Claude is quoted as saying that any condensable vapor passing from a hot vessel to a cold one may be made to yield power on the way and that the exact temperatures do not alter this fact. The only essential requirement is that the vapor generator shall be hotter than the condenser.

Also that his boiler temperature is obtained from the warm sea water obtained near the surface of the ocean and his condenser temperature is obtained from the cool sea water from the depths. A diagrammatic arrangement of the apparatus is illustrated in Fig. 3, the cold water pipe being nearly a mile long and going down to a depth where the water is thirty to forty degrees cooler than at the surface.

The warm water is taken from the surface and drawn (probably by vacuum) into the de-gassing tank and from this tank into the vaporizer which is kept free from air and has the vacuum maintained by an air pump located just above the vaporizer. Here the water is vaporized and the vapor flows through the turbine and into the condenser where it is condensed by the cool water from the bottom of the sea. The exact function of the two de-gassing tanks is not explained. Nor is given the source of power for the circulating pump to lift the water from the bottom of Matanzas Bay at Matanzas, Cuba, where the plant is located. This would be considerable, due to pipe friction and the greater weight of the cool water coming up when compared to the lesser weight of the condenser discharge water after it had done its condensing work and picked up a certain amount of heat.

While there was much skepticism among scientists as to it being possible to produce power in this way, Mr Claude apparently has demonstrated the possibility even if not the practicability. Among a few things which would presumably be an objection to the practical use of such a plant might be suggested:

(a) Necessity of being located on the sea coast practically at the water's edge and close to actual sea level.

(b) The vaporizing of sea water in a boiler which has been found objectionable on all sea going steam vessels due to salt and impurities in sea water.

(c) The power required to operate the circulating pumps when compared to the small amount of power available from a maximum overall temperature difference of only 30 deg. to 40 deg. F.

(d) The high cost of such a plant compared to its capacity. If it is assumed that, out of the $2,000,000.00 expended, only ¼ of this went into actual cost of the present plant and that ¾ was expended in experimental work, then the present plant cost $250,000 and has a capacity of 40 500-watt lamps or about 20 kw. Again assuming that a plant can be constructed with double the efficiency of the first one the production would be 2 x 20 kw. or 40 kw. On this basis the plant would cost 250,000 ÷ 40 or $6,250 per kw., whereas the ordinary steam plant would not exceed $200 per kw. making the initial cost of the sea operated plant over 30 times as much as a steam plant.

(e) The extremely high vacuum which must be carried which is very difficult to maintain in practical operation.

On the other hand no coal is required and the operating force would have practically nothing to do except to watch the apparatus work. It will be interesting to watch further developments along this line.

Editor's Note: The reader's name and address should accompany all inquiries in order that they may be answered directly by mail. Only questions of general interest are published and then not until the answers have been sent to the readers making the inquiries.

Questions Answered and Discussed by Readers

How the Question Was Answered

The following question was asked in the issue of November 15, and the accompanying answers are by readers:

There are two tenants on each floor of a 2-story steam-heated building. Each tenant has a gas-heated 30-gallon range boiler in the kitchen. How would you install an indirect water heater at the steam boiler to furnish hot water for all of the tenants during winter, leaving the present gas heaters for summer service?

Answers to question asked in the November 29 issue will be published later.

1

IN RESPONSE to your question in the November 15 issue of your paper as to how to hook up an indirect water heater to a steam boiler to furnish hot water for two tenants on each floor of a two-family house the following method would be my choice.

Make two 1½-in. connections on the sectional steam boiler below water line on preferably the first

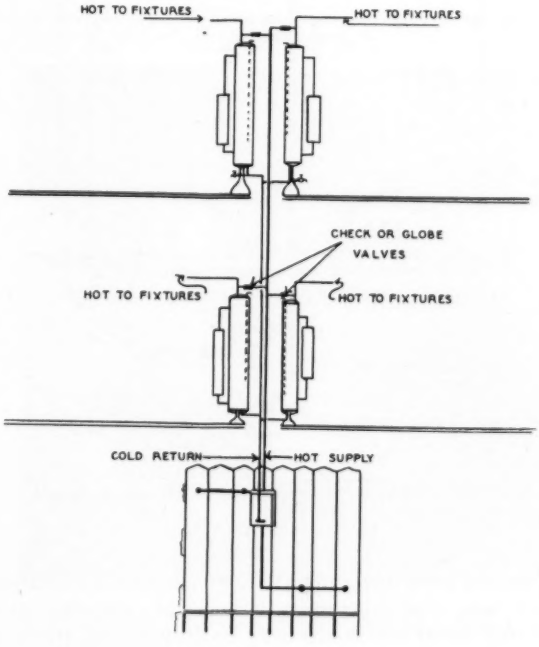

Fig. 1

and third sections and connect to indirect water heater.

Connect return end of indirect heater by similar connections to last and third last sections of boiler.

Run 1-in. line up through partition breaking off

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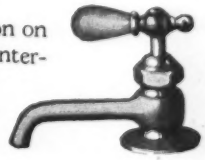

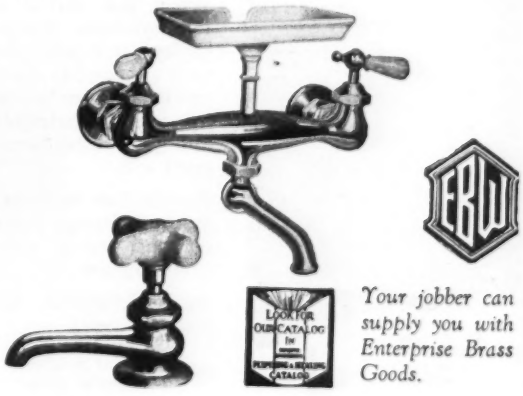

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with ¾-in. for boilers' supply, installing check valve before reaching each boiler to prevent a circulation in this line when gas heater is in use.

Bring back a 1-in. return to indirect water heater picking up ¾-in. connections from bottom of each boiler on this line.

The accompanying sketch outlines the set up.

New York City. John D. Dawson.

2

THE assumption is that the owner intends to furnish the domestic hot water supply during the house heating season, the same being probably included in the rent. The tenants no doubt will pay the gas bills for heating their own water during the summer months. Therefore whatever arrangements are installed to heat the water supply to all four tenants must be of such a character that no tenant can draw hot water from any other tenant's boiler during the season that the boilers are being heated by gas. This means that there must be no cross connec-

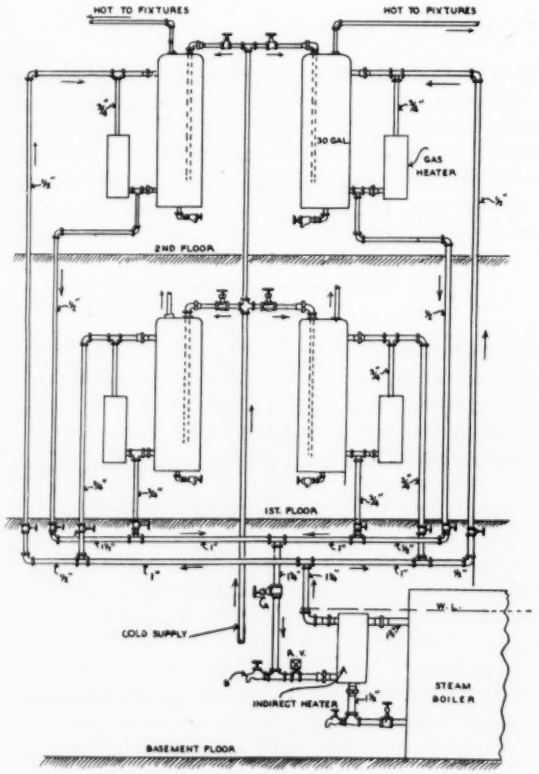


Fig. 1

tions between the range boilers whereby circulation can take place between boilers, or whereby gas-heated water can in any way be drawn from any tenant's boiler by any other tenant.

To prevent troubles of this kind, which most likely will occur if not guarded against, the indirect water heater may be installed substantially as shown in Fig. 1. The indirect heater discharges into a hot water supply header. A valved branch is run up from this header to each range boiler. From the bot-

tom of each boiler a return branch is run down to a return header which in turn delivers into the bottom of the indirect heater coil. These return risers are also valved at the basement ceiling. It will be observed that these valves are arranged in pairs, that is, a return valve is alongside its flow valve for convenience in shutting down either or all boilers.

The operation is as follows: At the beginning of the heating season the attendant opens all 8 valves on the risers, and at the end of the heating season he shuts all 8 valves. The result is that during the house heating season all 4 boilers will be heated from the steam boiler, each tenant receiving an ample supply of hot water without cost. But during the summer season each tenant will have to pay for the gas required to heat his own water.

In a job of this kind it is important that the piping be correctly proportioned so that the hot water from the indirect heater shall be equally distributed to each range boiler. It is equally important that the sectional area of the current flowing up through the heater coils be large enough to supply a good flow to all boilers without undue restriction or other form of retardation in the coils.

As a matter of safety we place a pressure relief valve on the return line near the indirect heater. For convenience in washing sediment and dirt out of the heater coils occasionally we install the valve A, in the return line to heater. To wash out the coils just shut valve A and blow out the coils through the drain cock B. The water thus flows full force through the coils and cleans out all sediment. As a rule every indirect water heater should be equipped with a valve A to ensure a forcible blowing out because sediment settling in the coils reduces the heating power of the heater.

Long and Short Methods of Solving Plumbing and Heating Mathematical Problems

(Continued from Page 42)

$$(6 \text{ ft.} \times 6 \text{ ft.} \times 0.7854) \times (8 \text{ ft.} - 3 \text{ ft.})$$

or

$$36 \times 0.7854 \times 5$$

or

$28.2744 \times 5 = 141.3720$ cu. ft. and to change this to cubic inches it is necessary to multiply by 1,728

$$141.372 \times 1{,}728 = 244{,}290.816$$

and to change to gallons it is necessary to divide by 231 since (according to Table I) there are 231 cu. in. in a gallon;

$$244{,}290.816 \div 231 = 1{,}057.536 \text{ gal.}$$

By the "inch" method all dimensions are taken in inches and the same formulae are used

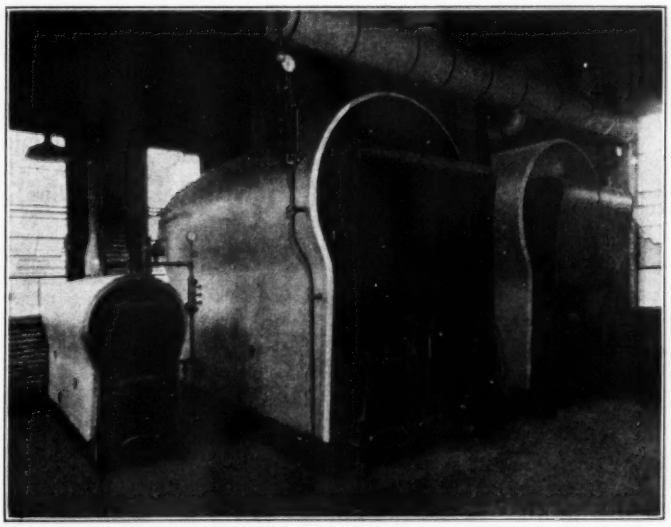
$(72 \text{ in.} \times 72 \text{ in.} \times 0.7854) \times (96 \text{ in.} - 36 \text{ in.})$

$(5{,}184 \times 0.7854) \times 60$

4071.5136×60

$244{,}290.8160$

and dividing by 231 again as before gives



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244,290.816 ÷ 231 = 1,057.536

By the short method

The area is ¾ of the square of the diameter or ¾ of 6 × 6 = 27 sq. ft.

27 sq. ft. × 5 ft. (height of water) = 135 cu. ft.

135 cu. ft. × 7.5 (gal. to 1 cu. ft.) = 1,012½ gals.

Piping

The interior of a round pipe is like a cylinder of indefinite height or length. By screwing lengths of pipe together a cylinder of any length desired may be produced. For this reason in computing the volume of water contained in a pipe the amount per lineal foot of pipe is usually selected as a basis and this amount is simply multiplied by the lineal feet of pipe in each case.

For example:—How much water will be contained in a 4 in. diameter pipe 12 in. long? Applying formula (10) and (14) the internal cross sectional area of the pipe is first calculated and as the dimension of the pipe is in inches the "inch" method will be used. This gives

(4 × 4 × 0.7854) × 12

16 × 0.7854 × 12

150.7968 cu. in.

150.7968 ÷ 231 = 0.6523 gals.

By the short method

(¾ of 4 × 4) × 12 ÷ 0.004 (gals. per cu. in.)

144 × 0.0043 = 0.619 gals.

The capacities of pipes in smaller diameters are more difficult to calculate owing to the fact that the nominal diameter varies from the actual diameter and the actual diameter must be used to get the correct quantities. To avoid this difficulty tables are published giving various details and information concerning standard size of pipe and some of these data are included in Table II.

It will be noted in this table that 11.3 ft. of 4 in. pipe are scheduled as containing one cubic foot. Then one ft. of 4 in. pipe will contain 1,728 cu. in. ÷ 11.3 or 153 cu. in. and 153 cu. in. ÷ 231 cu. in. = 0.662 gal. and this checks, within 1/100 of a gallon, with

Table II

Nominal Size of Pipe In. Dia.	Actual Diameter In.	Area of Pipe Sq. In.	Length Containing One Cu. Ft. Ft.	Length Containing One Gal. Ft.
⅛	0.269	0.057	2534	337
¼	0.364	0.104	1384	185
⅜	0.493	0.191	754	105
½	0.622	0.304	474	64
¾	0.824	0.533	270	37
1	1.049	0.863	167	22
1¼	1.380	1.50	96	13
1½	1.610	2.04	70.7	9.5
2	2.067	3.36	42.9	6.9
2½	2.469	4.78	30.3	4.8
3	3.068	7.38	19.5	2.6
3½	3.548	9.89	14.6	1.95
4	4.026	12.7	11.3	1.52
5	5.047	20.0	7.2	0.96
6	6.065	28.9	4.99	0.80
8	8.071	50.0	2.82	0.38
10	10.19	78.8	1.77	0.24
12	12.09	113.1	1.25	0.17

the amount calculated of 0.6523 gal. and within 4/100 of a gallon as calculated by the short method.

One short cut which may be used in calculating

the amount of water in a square tank is to multiply the area of the bottom in square feet by 5/8 of the depth of the water in inches. Thus, what is the quantity of water in a square tank which is 3 ft. wide × 4 ft. long and with the water 40 in. deep? The area of the bottom is 3 × 4 or 12 sq. ft. and 5/8 of 40 in. is 25; then 12 × 25 = 300 gals.

Cylindrical Tank on End

The same short cut may be used with a cylindrical tank provided it stands on end. Thus, what is the amount of water in a cylindrical tank 10 ft. in diameter if the water is 4 ft. deep?

Area of bottom is 3/4 of 10 ft. × 10 ft. or 75 sq. ft.

75 sq. ft. × 5/8 of 48 in. = 2,250 gals.

Working this out carefully the gallons are found to be 2,351.2 gals. showing the short cut is correct within 5 per cent.

Partially Filled Cylindrical Tanks on Side

With a cylindrical tank lying on its side and partially filled the calculation of the contents is a matter not easy by either exact or approximate methods, but if the tank is set level the approximate contents may be found by

(a) Dividing the depth of the water in inches by the diameter of the tank in inches. This gives the percentage of the total height of the tank that the depth of water occupies.

(b) Compute the entire number of gallons which could be put into the tank.

(c) Multiply the total gallons by the factor given opposite the percentage obtained by (a) in Table III.

For example:—An oil tank 4'0" diameter × 12 ft. long has the oil level 12 in. above the bottom. How many gallons of oil are in the tank?

Table III

Percentage of Diameter Covered by Water	Percentage of Water in Tank	Percentage of Diameter Covered by Water	Percentage of Water in Tank
0.05	0.018	0.55	0.564
0.10	0.052	0.60	0.627
0.15	0.093	0.65	0.688
0.20	0.142	0.70	0.748
0.25	0.195	0.75	0.805
0.30	0.252	0.80	0.858
0.35	0.312	0.85	0.907
0.40	0.373	0.90	0.948
0.45	0.436	0.95	0.982
0.50	0.500	1.00	1.000

Carrying out step (a) 12 in. ÷ 48 in. = 0.25 or 25 per cent.

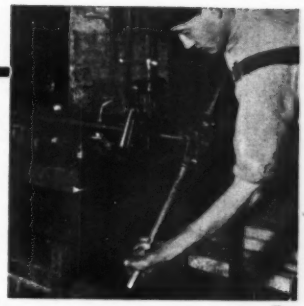
Then going on with (b) (4 × 4 × 0.7854) × 12 × 7.5 gals. = 12.57 × 12 × 7.5 = 1,131.30 gals.

And selecting from the second column of Table III the factor of 0.195 corresponding to 0.25 in the first column all that is necessary is to multiply the amount obtained in (b) 1,131.3 gals. by this factor of 0.195 giving

1,131.3 × 0.195 = 220.6 gals.

Water Pressure

Water being a fairly heavy liquid (weighing 62 lb. per cu. ft. as given in Table I) exerts considerable pressure when stood up vertically such as happens in pipe risers. The pressure due to the "head" or



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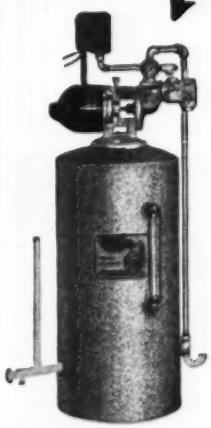

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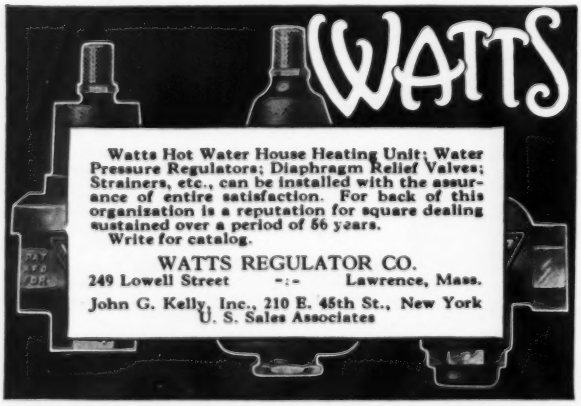
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height of the water is 0.431 lb. per sq. in. for every foot of height. This figure is obtained by taking a cubic foot of water, which weighs 62 lbs., and dividing by the number of square inches on the bottom of the cubic foot (12 in. $\times$ 12 in. or 144 sq. in.) 62 lb. $\div$ 144 = 0.43 lb. per sq. in. Now if there were 100 cubes of water superimposed, one on top of the other, there would result a column of water 12 in. $\times$ 12 in. by 100 ft. high. The pressure per sq. in. would be 100 times as much as if the column were only 1 ft. high or

0.43 lb. per sq. in. $\times$ 100 = 43 lbs. per sq. in.

Therefore with water the formula for pressure can be written as

(15) $P = 0.43 \times H$

if "P" is the pressure at the bottom in pounds per sq. in. and "H" is the height of the water column in feet.

Pressure in Standpipe

For example:—What pressure is exerted on the water piping in the basement if the water level in the house tank is 200 ft. above the basement lines?

Using formula (15) with "H" as 200 ft., the result is

$P = 0.43 \times 200$

$P = 86$ lb. per sq. in.

Another problem:—Can a house tank 300 feet above the street main be filled by city pressure if the street main carries 100 lb. pressure during the day and 140 lb. at night?

The "head" produced by the house tank 300 ft. above the street main would be, formula (15).

$P = 0.43 \times H$

$P = 0.43 \times 300$

$P = 129$ lb. per sq. in. on the main

During the day the main water has only 100 lb. per square inch and could not reach up to the house tank which requires 129 lb. But at night with 140 lb. pressure on the street main the water pressure in the street would exceed the head produced by the tank by

140 lb. — 129 lb. = 11 lb. per square inch.

This would be sufficient to allow for pipe friction and deliver water into the tank. Therefore the tank could be filled at night by city pressure but not during the day or at any time when the main pressure dropped materially below 140 lb. per sq. in.

Figuring Water Head

A short cut in figuring water head is to take the pressure at the bottom as 2/5 of the height in feet. For a tank 300 ft. high this would give a pressure per sq. in. at the bottom of the 300 ft. as

2/5 of 300 ft. = 120 lb.

This allows for some loss due to pipe friction.

Is Pressure Greatest in 4-in. or 1-in. Pipe?

One final problem; how much greater pressure will be produced by water standing 100 ft. high in a 4-in. pipe than water standing the same height in a 1 in. pipe?

Using formula (15) it is found that in both cases the pressure at the bottom will be 43 lb. per square inch, which is correct because quantity has nothing to do with head; only the height affects the pressure.

Legal Questionnaire

Answered by "The Judge"*

Right of Materialman to Mechanics' Lien in Missouri for Materials Used in Performing Contract with Tenant of Premises

Editor, DOMESTIC ENGINEERING:—I have a legal question for you to answer, one that is complicated and is as follows:

A certain chain store has a building here that it has leased for about twenty years. They remodelled the leased premises and put in steam heat and some plumbing, some outside firm doing the work. My problem is like this: Last October the first they put in a pump, hiring a curbstone plumber to do the work. The curbstone plumber came to me and bought the pipe and fittings and had the same charged to the chain store.

Now I find that the chain store contracted with the curbstone plumber for the work and have paid him for it. They claim that they are not responsible for the materials which I sold to the curbstone plumber and which he put into the job.

I did not know the plumber, never having seen him before or since the work was done. But I claim that the manager is to blame inasmuch as he did not require or receive any receipted bill from the said plumber.

I would like to know how to secure myself on this, as I believe that I can make the building stand good. I think a material lien would hold good, although I might have to sue the chain store, and also the people who own the building.

Or this might be considered as an open account. I cannot say, as I do not know, but I think, inasmuch as it was used on a building to perfect the building, it is subject to a lien.

Missouri. M. J. A.

Your mechanic's lien statute, according to my latest information, reads: "Every mechanic or other person . . . who shall do or perform any work or labor upon or furnish any material, fixtures . . . for any building, erection or improvement upon land, or for repairing the same, under or by virtue of any contract with the owner or proprietor thereof, or his agent, trustee, contractor or sub-contractor, . . . shall have a lien upon such building . . . and upon the land belonging to such owner or proprietor. . . ."

Under this statute it has been held that if the owner contracts with his tenant for the making of improvements of substantial benefit on the leased premises, a lien attaches against the estate of the owner and the estate of the tenant. But where the landlord only consents that the tenant at his option may make improvements, the owner's interest in the land is not subject to a lien.

It has even been held that where the tenant, under his lease, is to make all improvements at his own expenses, a lien may attach to the interest of the owner of the land, provided the improvement is a substantial one and one which reverts back to the owner at the end of the lease. For instance, in one case, a tenant was to remodel the leased premises, and erect an entire new front entrance to a theatre, the improvement to go back to the owner at the end of the lease. In that case the court held that the lien attached to the land and building on the ground that it was a substantial improvement and one which was for the owner's benefit at the end of the lease.

In order that work done by a tenant shall give rise to a lien on the owner's property, there must be a substantial increase in the value of the property which goes to the landlord at the end of the term of the lease. Mere minor alterations, or repairs which a tenant must make to keep the premises in repair during the term of his lease, will not give a right to a lien against the property of the owner.

But you may have substantial rights against the chain store, as tenant, and a right to a lien against the leasehold of the chain store, under the facts as you state them. I am inclined to believe that you have. It may be that as the chain store has a lease for twenty years, your right to a lien against its lease may be of such value that the chain store will settle your bill rather than fight it.

Your statutes provide, among other things, that you have a right of lien against the tenant, the chain store in your case, for your materials. Instead of a lien against the land and buildings themselves, you have a lien on the lease of the chain store. That may or may not be valuable, depending upon the terms of the lease, etc., but as the chain store has made substantial improvements by an installation of steam heat and some plumbing, it is probable that it will not want to have its lease sold under mechanic's lien proceedings.

It would almost seem as if you might have a good lien against the owner and his land and buildings, if the lease provides that the steam heating plant and the plumbing are to revert back to the owner at the end of the lease. The more substantial the steam heating and plumbing installations were, the better will be your right to a lien against the owner's property,—always remembering that the improvements must revert to the owner at the end of the lease and by the terms of the lease. Of course, you have no claim upon which you could bring a suit at law, as distinguished from a lien proceedings, as against the owner, as he didn't enter into the contract, I presume.

As this is not the ordinary lien case, it will be necessary for you to secure the services of an attorney, who can go into all the facts with you and take the necessary steps to perfect your lien, as the working out of lien

* Every effort is made to the end that these answers may be authoritative. However, we cannot assume any responsibility because of the very nature of the service, which is rendered without a personal interview.—Editor.

rights is always a very technical procedure, and will be especially so in your case, where you probably will decide after talking with your attorney, that your best bet will be to file a lien against the chain store's leasehold interest.

While I agree that the chain store manager should have required some protection against a lien from the curbstone plumber, that is his fault and loss, and would not appear to give you any larger rights simply because he didn't do so. Whether or not he required such protection, does not affect your right to a lien one way or the other. Your rights are entirely independent of that phase of the case.

Your best course would appear to lie along the road which will perfect your lien right against the chain store's interest in the property under its lease.

◆

Form for Master Plumber's Contract in Kansas—Damages Due Master Plumber if Owner Refuses to Pay as Work Progresses

Editor, DOMESTIC ENGINEERING:—Enclosed you will find a copy of our Contract Form. I would appreciate it very much if you would look this contract over and see if it can be benefited in any way for use of Kansas.

Kansas. H. W. P.

Answer:—The contract form which you enclosed is as follows:

Standard Plumbing Contract

Number of Contract.....
City..... State.....

This Agreement, made and entered into this..... day of....., 19..., By and Between.....
Name.....as the party of the first part, and.....
as the party of the second part, herein designated as the Plumbing Contractor:

Witnesseth: The party of the second part, the Plumbing Contractor, for the sum of.....
..... dollars ($.....), hereby agrees to do the following plumbing work and furnish the following material and fixtures in connection with the construction-alteration of.....
..... at
..... Street in accordance with the specifications following, it being mutually agreed and understood that where no particular make or number is specified, the Plumbing Contractor shall use his discretion in making selection of material to be used.

.....
.....

All work to be done in a good and workmanlike manner.

A carrying charge of 4 per cent of the contract price will be added in the event 50 per cent of the contract price is not paid on completion of roughing in for all fixtures, or if any balance or payments are delayed over ten days. However, second party does not grant the above rights of payment unless it is agreed herein or hereafter in writing.

Carrying charge if carried until completed $.....

The party of the first part hereby agrees to pay the Plumbing Contractor the sum of.....
..... dollars ($.....) for the above described.....
.....
Plumbing work, said amount to be paid as follows:

.....
.....
.....dollars ($.....), by the time of completion of roughing in for.....
.....fixtures; .....
.....dollars ($.....), by the time of the installation of.....
.....fixtures. Balance when work described herein is completed.

In the event of the first party's failure to make any payment as herein provided, the Plumbing Contractor may, at his option, refuse to further proceed with the work, and the Plumbing Contractor shall in no way be liable for any damages whatsoever by reason of such refusal. In the event that the Plumbing Contractor shall abandon the work, for the reason above stated, or in event of loss by fire, the price mentioned herein for the completed work shall be disregarded, and payment in full for all work done to that time shall be immediately due and payable, the value of such uncompleted work to be determined on the basis of labor and material cost, as evidenced by supply dealers' invoices and Plumbing Contractor's time book or payroll, plus twenty-five (25) per cent of such cost.

Plumbing Contractor reserves the right to make this contract a matter of record.

It is further understood and agreed that payment for roughing in work or allowing later work to proceed shall constitute an acceptance of the roughing in work as satisfactory, and that no claim shall be made against the Plumbing Contractor for damages or errors after the work has been passed by the city inspector.

All agreements entered into or contracts made by us are contingent upon labor troubles, fires, accidents, or any other delays beyond our control or power to remedy. Payments for additional labor and material shall be made as provided above for other work.

.....
Party of the First Part.

.....
Plumbing Contractor, Party of the Second Part.

There are several changes which I believe could be made to your advantage in your contract form.

The first change which I suggest would be in the fourth paragraph from the last, in which you provide for your damages in the event that you stop work either because the owner refuses to make the payments which he has agreed to make or because of fire.

If you had not mentioned the situation which arises if the owner refuses to make payments as provided, as a matter of law you would be entitled to receive as damages, in addition to the expense which you had been put to when you furnished labor and materials up to the point when the owner refuses to go on or committed a breach of his part of the contract, an amount equal to what your profit would be, if you had completed the contract. In other words, if the owner is at fault, for any reason, and you are entitled to stop your work because of that fault of the owner, your damages would be the profit which you would have made *if you had completed the contract.*

You have provided in your contract for smaller damages than the law would allow you, since you have provided that your damages shall include only a profit on the work which you had done up to the time you stopped work.

I suggest that the wording of the last sentence in this paragraph be changed to read: "In the event that the Plumbing Contractor shall abandon the work for the

reason above stated, or for any other reason that is the fault of the party of the first part, or in the event of loss by fire, the price mentioned herein for the completed work shall become immediately due and payable, other provisions herein as to time of payment to the contrary notwithstanding; but there shall be deducted from the said price for the completed work an amount equal to the actual cost of labor and materials necessary to complete the unfinished part of the contract work."

Such wording will permit you to enjoy your full legal rights which include the same profit to you as if you had completed the contract and the owner had not been at fault.

The wording which you have used would put no penalty upon the owner for his breach of the contract, as he would only have to pay you for what you did, whereas you are entitled to the full benefits of your contract, if you are not at fault.

Probably you know it, but your contract as written, with its provision for a profit of 25 per cent on the cost, would net you but 20 per cent of the amount which you would receive under your fourth paragraph of your contract. For instance, if your labor and materials amounted to $100, and you received $25, or 25 per cent of $100, that would be but 20 per cent of $125.00, the amount which you would receive. 25 per cent of $125 is $31.25. This is not material, however, if you use the wording which I have suggested.

In your last paragraph, your use of the words: "or power to remedy" practically nullifies the advantage of that paragraph to you. I should leave those words out. If you leave them in your contract it would mean that you might be called upon to remedy a situation by the expenditure of large sums of money, in so far as money would be a remedy for the situation, not to mention other things that might be within your power to do.

The next to the last paragraph of your contract is in your favor, certainly, but a careful owner would surely make any payment after roughing in, with a reservation of his right to complain for faulty work or materials. If I were acting as attorney for the owner, I should not permit him to sign a contract with such a clause in it. City inspection is not a guaranty of the work, but merely that certain requirements have been lived up to. You can very probably imagine many things that you would not accept as an owner, even though the city inspector had passed the job such as fixtures which were different from those provided for in the contract, to mention one detail that comes to mind.

One other suggestion: Why not include in your contract a provision that title to materials shall remain in the Plumbing Contractor until they have been paid for? In other words, include provisions in your contract to make it a conditional sales agreement. With such provisions, to make it effective as a conditional sales agreement, it would have to be recorded. Recently I acted as attorney in a case involving a considerable amount, in which the owner was tricky and in which we recovered our money merely because the owner wished to refinance his property and could not do so without paying up because our Conditional Sales Agreement was on record and the bank would not advance any money to the owner without a release of our contract. Such an agreement is not a cure-all, but it has advantages in many cases.

If you wish to include conditional sales agreements in

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And satisfied customers too!

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THE DOLE VALVE COMPANY

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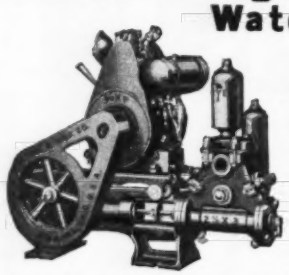

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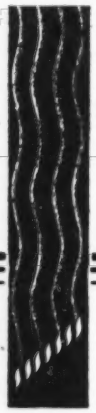

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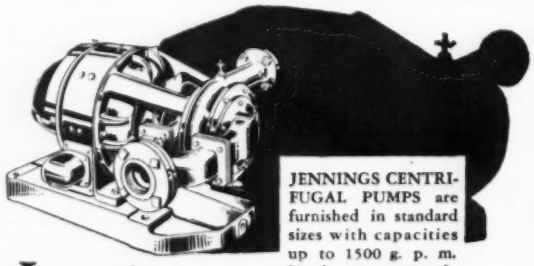

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Lincoln Bldg., E. 42nd St., New York City

your contracts, I suggest that you consult an attorney who will be able to go into details with you and will be in touch with your very latest statutes.

What Is the Heating Effect?

(Continued from Page 49)

36.0 *to* 22.3, *or* 13.7 *sq. ft., or* 38 *per cent. At least* 1/3 *less cast iron was required,* based on the same unit weight of 7 lb. per sq. ft. of area for each radiator.

Conclusions

The following conclusions may be drawn from the data given:

1. The steam condensation of a direct cast-iron radiator expressed in pounds of condensate is not an adequate measure of the performance of the radiator. The "heating effect" produced on the air in the room must be taken into consideration in making comparisons between different types of radiators.

2. Long, low cast-iron radiators placed under windows heat a room more comfortably and more economically than higher column radiators placed at the side of the windows.

3. Long, low cast-iron radiators maintain materially better floor to ceiling temperature differentials than high column radiators.

4. The larger portion of the temperature differential in a room heated with direct steam cast-iron radiators of the column and tubular types occurs between the floor and the breathing level.

5. The temperature used as an indication of whether a room is properly heated or not should be taken at some level nearer the floor than the breathing level.

A Recommendation

If the results from this entire investigation of room heating indicate anything, they indicate that air temperatures taken solely at the 5 ft. 0 in. level or "breathing line" in a room are a very poor index of the effectiveness of the heating unit in the room for maintaining satisfactory temperatures at the 2 ft. 6 in. level or "comfort line," as it may well be called. Unquestionably both "breathing" and "comfort" line temperatures should be taken into account and it also appears probable *that the system which for a given "breathing line" temperature will maintain the highest "comfort line" temperature is the best.* From data now available, it is almost certain such a system will also require the least heat input into the room.

◆

H. P. C. N. A. Makes Survey of Heating Industry

The Heating and Piping Contractors National Association recently completed a comprehensive survey of the heating industry in over 200 cities throughout the country. Among the facts disclosed are the following: In 205 cities an 8-hour day obtains; in 7 cities, a 9-hour day, and in each of the other three cities, 8½, 8¾ and 9½ hours constitute a day. In 85 cities a 5-day week prevails and in 19 an apprenticeship system is in force. That 127 cities have agreements with unions and 77 do not, is also brought out by the survey.

The Raised Rear Vent

(Continued from Page 67)

the past year, all in high-class residences. However, over about a period of three years I placed a great many, 90 per cent of which were in factories and iron mills.

"I question the wisdom of this extra expenditure for the above named buildings and public toilet rooms which as a rule are of a fair size and in nearly all cases have fan ventilation, at least I find it so in our city and surrounding territory. In my judgment ventilating registers without fans would hardly serve the purpose.

"I am personally opposed to the removal of this vented bowl from the list of standard fixtures. I have them in my own home and never in ten years have I detected the slightest unpleasant odor in my bathroom."

Opinion from National Director

A letter from R. G. Thomas, director of the National Association of Master Plumbers, advises us that after inquiring of master plumbers and the plumbing inspector in his locality (San Antonio, Texas), he found that practically no water closets of the raised rear vent type have been installed there in the past twelve years. As for whether he has found the air in public toilet rooms served by ventilating registers in the walls (not including fans) as pure as in the rooms where raised rear vent closets are installed, he states "Frankly, I have failed to see much difference for the reason that owing to certain atmospheric conditions and wind movements the best of ventilating systems, whether they include registers or seat ventilated toilets, will at times have a strong down draft. Consequently, I believe that the only sure method is to use exhaust fans which will work under any and all conditions. Where an exhaust fan is used and where there are the proper number of registers in the room, I see no good reason for the raised rear vent water closet."

Another contractor writes, "Although we have installed none, outside plumbers seem to be able to come into our city and show us how to do it. Our recently built schools are equipped with raised rear vented bowls and vents to attic flues.

"We would prefer that these fixtures be retained in the catalog. Some twenty years ago, we placed one for a prominent factory official and connected the vent pipe to a flue at the side of a smoke stack which kept the vent warm and very efficient during the heating season. As the flue was very high, it operated excellently during the remaining months of the year. The owner complimented us a number of times on the solution to his ventilation problem and on the placing of the vent because he found it was not necessary to open the bathroom window for ventilation. We value such vent connections very highly and use them whenever possible where the owner will spend the extra cost involved."

Massachusetts Requires Raised Vent

A Massachusetts contractor states: "The Massachusetts State Board of Education requires the installation of raised rear vent water closets in school house building. These are practically the only places where we have used them as practically no other public building work has been done in our territory recently." Incidentally, this contractor is in favor of retaining this equipment on the standard list.

Another interesting reply says, "There are two ways to answer the question of whether I am in favor of or against the removal of the raised rear vent closet from the standard list. First, from a contractor's viewpoint, yes. Second, in regards to efficiency, no. I have a raised rear vent water closet in my own home and at no time is there any odor from it. In the use of ventilating registers in walls, the foul air must leave the bowl before going into the

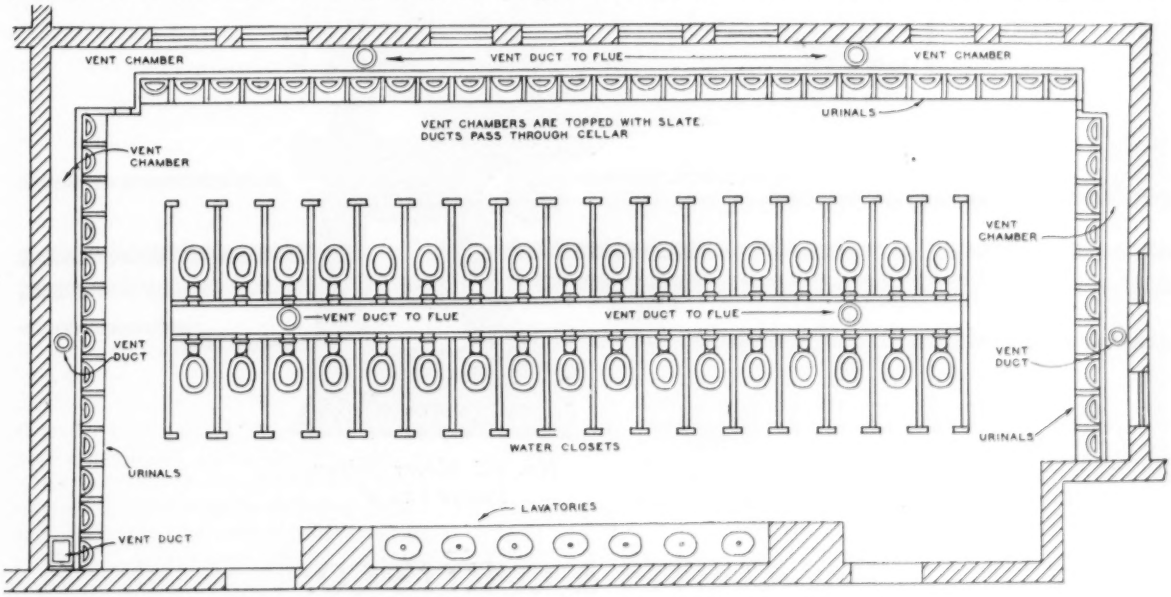


Fig. 8

register thereby contaminating the air in the room in which the water closet is installed." The contractor who makes this statement operates in Massachusetts and installs from 50 to 150 water closets of this type each year.

On the other side of the question we have received such statements as the following: "I have not installed any raised rear vent water closets because there has been no demand for them. Architects have not specified them. For fifteen years we had on our show-room floor a high grade bowl of this type but were unable to move it in that time."

The same contractor goes on to say that he is in favor of the removal of this fixture from the list and "I have found no difference in wall registers and rear vent closets. In my opinion mechanical ventilation for public toilets is the only method."

An opinion from Minnesota advises that "None of these closets were installed by us last year or for a number of years past. In some old toilet rooms at one of the schools here they have raised rear vents. In contrast, the new toilet rooms in the same school do not have the raised rear vent closets, and there is little, if any, difference in the air. All of the rooms have window ventilation. No fans are used. In another installation in a cafeteria, suction fans to remove odors from the toilet rooms were installed. Louvres were provided in the doors to admit fresh air. It is interesting to note that without the louvres in the doors, and with the doors closed, the fans were almost useless.

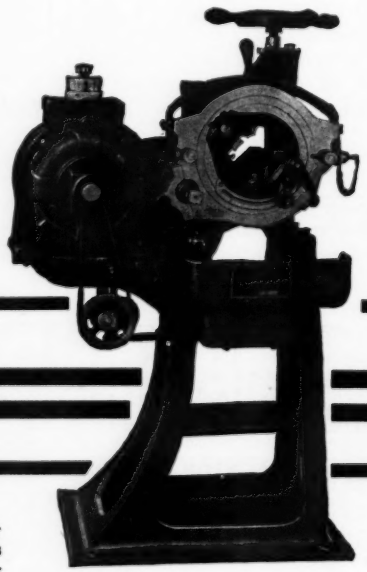
Tabular Results of Comment in Favor of Raised Rear Vents

Number Installed	Type of Building	Location
200	Schools	Massachusetts
100	Schools	Massachusetts
60	Schools	Pennsylvania
56	Schools	Indiana
40	Schools	Indiana
16	Schools	New Hampshire
15	Schools	New Jersey
13	Schools	Ohio
12	Homes (in rooms without windows) and first class residences	New York
9	Residences	Ohio
5	Schools	Massachusetts
526		

"We fail to see where there is any need for the raised rear vent closet. In our opinion, public toilet rooms should have non-absorbent walls and floors and should be equipped with some type of suction fan to remove odors from the entire room, either through a shaft built for that purpose or through a space provided in one of the windows."

A New Jersey contractor says that he installed fifteen closets of this type in a public school last year but that he is in favor of eliminating the raised rear vent closet entirely as he considers it obsolete. He explains that "This one school installation was due to the fact that it was an addition to an old building. The old section had the raised vents and the architect desired to carry out the same type throughout. This was the only school out of several hundred

Curtis
PIPE THREADING MACHINE



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figured, and the sooner they are eliminated the better for everyone."

Small List of Standards Favored

A Wisconsin contractor contributes the following: "I have worked in public buildings in this locality for about four years and all of the toilet rooms, to my knowledge have been ventilated by the separate fan ventilating system and by windows. If the raised rear vent type of toilet has been proven a success, I do not believe in abolishing it, although I am in favor of as low a standard list as possible."

Certify It!

(Continued from Page 78)

qualified as to integrity, natural soundness and right attitude. He must be thoroughly informed of the standards of action prescribed for the Certified Plumber and must be willing to give them his enthusiastic support. Every plumber can not become a Certified Plumber, because if this were allowed the purpose of the organization would be defeated. This can be handled through the association without trouble. The association can either accept for membership only those who are qualified in the manner prescribed by Certified Plumbing, or else, those members who can not subscribe to the standards of certified plumbing, can still retain membership in the association and gain therefrom all of the benefits they are now gaining; and those alert and earnest plumbers, now members of the association, can, by subscribing to the standards of action of Certified Plumbing, gain the added individual benefits that it extends.

(2) The second principle of certified plumbing is the establishment of uniform specifications. We go to the public and acquaint it with the fact that certified plumbers operate upon uniform specifications. Then a confidence can be built up in the public mind for specifications of Certified Plumbers standards through the architects, which will limit the hazards of substitution through competitive bidding.

(3) The third principle of Certified Plumbing is the establishment through proper advertising in its various forms, of a public recognition and awareness of the higher standards of the certified plumber and to enkindle a desire for the comfort and conveniences and benefits of modern plumbing installed by certified plumbers. Such recognition is one of the crucial points upon which this entire plan revolves. Certified Plumbing will be of little individual value until the public is made thoroughly cognizant of it. This "mental property" of preferential recognition and good will for the Certified Plumber is a real type of property that can be considered a negotiable asset; possessing large value, and one that each individual certified plumber can make full use of to his own individual benefit without being forced to invest the impossible cost of individually creating it.

(4) The fourth principle of Certified Plumbing is that of proper schooling and training to make it possible for individual members to become better merchandisers by the publication of profit-making sales

YOUR FITTING PROBLEM IS SOLVED *when you say* "SQUARE GEE'S"

SQUARE Pipe

"GEE" Fittings

DRAINAGE, BRASS

MALLEABLE CAST IRON

THE GRABLER MANUFACTURING CO., CLEVELAND, OHIO

San Francisco Los Angeles New York Chicago

A Thousand to One Shot

And you are not taking a chance—the market is ready-made—the prospect is waiting—check book in his hand—for you to call and advise the installation of a COLUMBIA Gas Burner, Conversion Type.

Mr. Home Owner has been having plenty of fuel troubles and is satisfied that Gas is the ideal fuel, has decided to buy the gas burner recommended by you as an heating and ventilating expert.

Because of its many exclusive features, such as a fool- and trouble-proo Electric Pilot and Lighter, absence of Baffle replacement and an automatic positive Thermostatic control, the COLUMBIA Gas Burner is the logical choice of the prospect and a big money-maker for the dealer.

The Columbia Burner Company, 1645 Dorr Street, Toledo, Ohio, give their agents every assistance possible, in the way of advertising and sales helps and suggestions.

Territory is being taken every day—so write now.

Paragon SELF-CLOSING FAUCETS with renewable seats

SMOOTH ball-bearing action. Patented "Samson" Lock, which makes Paragon handles easiest to adjust without special tools. Longer wear—better action. A wide variety of bodies and handles. Write for folder on the complete line.

Through your Wholesaler

The CENTRAL BRASS Mfg Co

PARAGON DIVISION CLEVELAND O.

NATIONAL Control

of dampers, centered in METAPHRAM DAMPER REGULATORS provides constant, gradual movement of draft and check dampers to compensate for changing heat demands.

There is a METAPHRAM DAMPER REGULATOR for every domestic heating boiler.

Write for descriptive literature covering your control requirements

National Regulator Co., 2317 Knox Ave., Chicago, Ill.

plans. Such training and plans shall involve the issuance of a small manual to each member giving specific training in the sales operation of every phase of the business and including sales promotional campaigns that he can use in his surrounding community for the promotion of his individual business. This manual will give him the latest information on how to sell, how to keep a budget control and will premeditate certain profit goals; how to enlist, train, direct and compensate a selling organization should he desire one; how to conduct direct mail campaigns and how to follow up this program; how to sell the time payment plan that this organization will work out for him.

This will bring to each member a service of great tangible value for the money he pays into his local and national association for the privilege of being a certified plumber. In addition to this manual, high class sales promotion material will be carried in stock which he can order under his own imprint and mail himself, thus saving himself the cost of creating this material.

(5) The fifth and last principle of certified plumbing is that each member will operate under a bonded guarantee that will give assurance to the public that installations will be made in accordance with uniform specifications or that the Certified Plumbing association will make such installations good. In this connection, should any certified plumber fail to make installations that will properly pass the inspection of certified plumbing inspectors, they will not release him from his responsibility until he has properly and satisfactorily corrected the installation. If he refuses to do this, his bond will be forfeited and another member will bring the installation up to specifications, and the defaulting member will be suspended from membership until the cost of such correction is fully adjusted by him.

In connection with the initial discussion carried on with the Plumbing Contractors' Association of Chicago, there was a demand to see certain elements of the certified plumbing plan visualized. The counsel prepared rough dummies of the major elements of certified plumbing and these I presented to the Chicago group. These elements, with such changes in copy as are necessary, would apply just as well to the undertaking if adopted by the national association.

Advantages Summarized

It is self-evident that the inauguration of Certified Plumbing by the national association will send a new dynamic virile influence to permeate the plumbing industry. This idea will permit the national association to take off the yoke of persuasion, exhortation and suggestion and actually strip for action. It provides it with an instrument that definitely and actually will contribute to the individual profit and prestige of members in such a way as to give them a new estimate of the value of belonging to the association and becoming certified plumbers.

MINERAL FELT Pipe Covering

(Canvas Clad)

The Preferred Insulation for Heat and Cold

It is more efficient and will last longer than any competitive material on the market. It fits the pipe line perfectly, and gives a beautiful and uniform appearance. It is the preferred insulation in hospitals, schools, churches, dairies, laundries, and all power plants where the utmost efficiency is demanded.

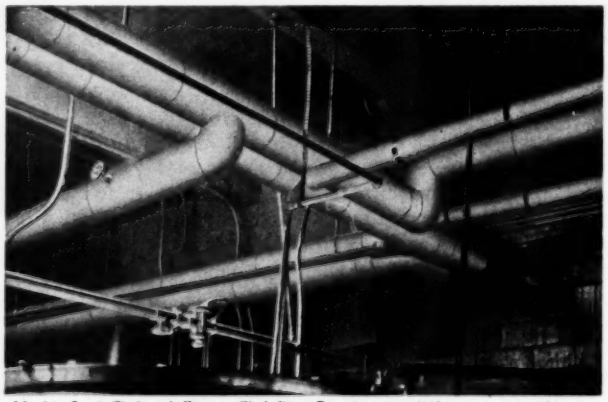
Numerous laboratory tests, by accepted authorities, prove that the insulating qualities of Minfelt Pipe Covering are superior to any other type of insulation now being manufactured.

Minfelt Pipe Coverings are particularly unique in that they are equally as efficient for insulating low and high pressure steam lines. And refrigerator lines with temperatures as low as 60° below zero.

Perfect delivery (without breakage) is assured because of the mandrel or core within.

Here Is Your Money Making Opportunity

Plumbing and heating engineers have found that the Mineral Felt franchise is the biggest money-making opportunity in the field. There is a Mineral Felt product for every insulating need. Send for full details.



Minfelt Steel Clad and Canvas Clad Pipe Covering, installed on steam, cold water and refrigerating lines in a prominent Detroit creamery.

The MINERAL FELT INSULATING CO.
2244 Albion Street :: Toledo, Ohio

It is not a sensational conclusion that the time has arrived for the association to do something that will definitely contribute to the individual benefits of the earnest master plumber, because they are wrestling with problems which they can not individually solve. They must look to the association for assistance. Passing regulatory measures or suggesting solutions will not do, for they have not in the past, corrected these evils.

The Outstanding Features

The outstanding features of Certified Plumbing may be summarized in the following ten points:

1. It will eliminate the irresponsible contractor and make it impossible for the untrained to longer control the activities of the trained class.
2. It will assure the public a higher standard of installation.
3. It will increase the resale value of buildings and decrease the selling resistance of marketing them.
4. It will insure the mortgagor that his money will be spent according to the plans.
5. It will stimulate building activity, cause a higher average installation, specifications of higher quality materials, and create a larger replacement market.
6. It will retain for the individual plumbing contractor his identity, and guarantee his ability to profitably perform in the future.
7. It will improve plumbing standards and restore recognition of the prestige and service which is the plumbers' due.
8. It will create a larger replacement market.
9. It will make the plumber a more successful merchant.
10. It will increase the individual profits of each individual.

After all, each master plumber is in business for the sole reason of making a profit. Problems confront him, over which he has no control which prevent him from making a profit and only by acting in an associated way can he hope to remove these hazards to his individual profit. Certified Plumbing is the instrument that will permit him to do this.

How Plumbing Is Installed in Government Construction Work

(Continued from Page 55)

The general idea of the connection of such apparatus with the drainage and vent systems, is seen in Fig. 7. It will be noted that the venting for the sterilizers is entirely separate from that of the common fixtures.

This special venting for the sterilizers is not in the nature of ordinary venting for the prevention of siphonage of traps, but to vent the steam used in connection with the sterilizing operations. As in the case of condensers receiving steam and hot water from heating plants, the special vent must not connect into the regular vent system, as the discharge of steam directly into the plumbing system would be likely to do damage.

Fig. 8 shows a detail of the diet kitchen, which is common to the second, third and fourth floors.

Further consideration to the subject of United States veterans' hospitals will be given in another article.

SPEED HEATERS

Speed Heaters for all standard voltages, A. C. and D. C., are carried in stock at conveniently located storage points throughout the country. On-the-dot shipment is assured.
The Sturtevant Speed Heater is sold by CRANE CO. through dependable heating contractors everywhere.

B. F. STURTEVANT CO.
Main Offices: Hyde Park, Boston, Mass. —Chicago, Ill.—San Francisco, Cal.
Branches in Principal Cities

Sturtevant

(See Domestic Engineering Plumbing and Heating Catalog)

No. 2 Vacuum Valve

MODERN HEATING EQUIPMENT
for all types of Buildings

HOFFMAN VALVES
HOFFMAN CONTROLLED HEAT
HOFFMAN-ECONOMY PUMPS

Write for Catalog

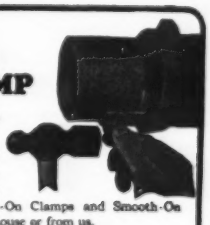
HOFFMAN SPECIALTY CO., INC.
DEPT. RX-53 WATERBURY, CONN.

ONE OUT OF EVERY SEVEN MEN

in the Stockham Plant is engaged in inspection—
no imperfect fittings to discard when you buy Stockham

CAST IRON
MALLEABLE IRON
and
ELECTRIC CAST STEEL FITTINGS
for every pipe line need

Stop pipe thread leaks with SMOOTH-ON No. 1 in a
SMOOTH-ON CLAMP
Sizes for 1-in. to 12-in. pipe.



QUICK, easy, cheap Holds for the life of the line—any pressure, any temperature, iron, brass, or copper pipe. Get Smooth-On Clamps and Smooth-On No. 1 from nearest supply house or from us.

Write for the free Smooth-On Handbook.

SMOOTH-ON MFG. CO.
Dept. 12, 574 Communipaw Ave., Jersey City, N. J.

SMOOTH-ON

Anticipating the needs of the trade

THE sound, steady development of the Sloan Valve Company during the past quarter century has been due in a large measure to the foresight which has constantly anticipated the needs of the trade.

When flush valves were less widely used than today, Sloan not only created confidence with a superior product but assisted the trade through a national service organization expertly trained and readily available wherever flush valves were sold.

As the rapidly expanding flush valve market indicated the need of valves for special conditions in a wider range of prices, Sloan brought out the required additions and made it possible for the trade to furnish Sloan quality and performance for any installation.

The wisdom of this course has been amply demonstrated by the position of leadership which the plumbing industry has accorded to Sloan Flush Valves for many years.

Today, with a rich background of engineering, manufacturing and sales experience, the name *Sloan* has come to mean a better flush valve for the money — an assurance of unfailing quality and service backed by a quarter century of proof.

SLOAN VALVE CO · CHICAGO

BRANCHES IN ALL PRINCIPAL CITIES

ROYAL MARINE STAR NAVAL GEM

MARKETS

BUSINESS REPORTS FROM LARGE JOBBING CENTERS

TWO developments of outstanding importance to the plumbing and heating market occurred during the past fortnight in the form of price advances on two major commodities, namely enameled ware and boilers and radiation. The enameled ware change took place on December 15, at which time practically all the large manufacturers issued new sheets to their distributors incorporating a substantial increase over the previously published quotations. On the same date, reports were received from the majority of boiler and radiator manufacturers to the effect that they had issued new sheets which carried higher prices. It was pointed out in these columns toward the latter part of November that the action of a number of manufacturers in shortening discounts at that time in territories where the market was weak was strengthening the price situation in boilers and radiators.

The advance in boiler and radiation prices, according to manufacturers, brought forth a considerable volume of inquiries, but the bulk of this business was for future delivery. Enameled ware manufacturers also reported a quickened interest on the part of their customers as regards their future needs for ware, but buying on the part of wholesalers could not be termed heavy in the majority of cases. Face to face with the inventory period, jobbers are withholding the taking-in of fresh material, and, except where price advances make it good business, they are not paying much attention to their first quarter needs. Manufacturers have sufficient stocks of most items to take care of rush orders in quick time.

Two manufacturers and wholesalers out of three expect business to improve during 1931, although nine out of ten of them did a smaller volume of business during the first eleven months of 1930 than during the corresponding period of 1929, according to a survey covering 330 of the country's larger firms conducted by the National Association of Credit Men.

Only three per cent of the firms reported an increase in dollar volume of sales over 1929, although a considerable number stated that their unit volume had not declined, lower prices accounting for the difference. Six per cent reported sales equal to 1929, and 91 per cent a smaller volume.

Collections during 1930 held up much better than sales, according to a majority of the firms reporting. Twenty-four per cent said that collections were better during 1930 than during 1929. Forty-seven per cent reported collections slower and losses greater, while 25 per cent reported no change in the ratio of collections to total sales.

A number of those reporting an improvement in collections stated that a more conservative credit policy was being pursued. Another comment frequently made was that "collections are holding up, but require more effort."

Regarding the outlook for 1931, 67 per cent anticipated improvement, 25 per cent were planning for a volume equal to that of 1930, and only 8 per cent expected worse conditions. Many of those anticipating improved conditions added the comment "after April 1," or "after the first six months."

CENTRAL WEST

Inventory Slows Buying

THE past fortnight was featured with the announcement on December 15 by boiler and radiator manufacturers of an advance in their prices to wholesalers. On the same date word was received from the majority of enameled ware manufacturers that they had issued new sheets to their distributors, which carried higher prices. The price advance on boilers and radiators, according to manufacturers interviewed, resulted in a fairly good volume of business, but practically all of this was for future delivery and it cannot be determined at this time just what percentage of this will actually materialize. Jobbers, it is reported, displayed more interest in their enameled ware stocks following word of the price advance, and manufacturers' salesmen say that a fair volume of business was taken for shipment after the first of the year.

Except for enameled ware and boilers and radiation, buyers for wholesale houses did not show much concern in regard to their stocks of materials, their attention in most cases being directed toward approaching inventory-taking. Jobbers as a general rule have reduced their holding to a low level, but no complaints are heard from contractors concerning the ability of their sources of supply to furnish material as needed.

In knocking the props from beneath "Old Man Depression," the Chicago board of education has announced that thirteen new school buildings will be ready for contract letting in the early part of 1931. This alone represents an investment of $20,000,000. Some $3,000,000 in World's Fair work will get under way in Chicago after the first of January, and, as announced previously in these columns, some $8,500,000 is to be awarded on five major structures for the University of Chicago early next year. These projects, it is estimated by the Building Construction Employers' Association, will provide employment for about 20,000 workmen.

In a recent survey covering 330 of the country's larger firms conducted by the National Association of Credit Men, credit executives of these firms were asked to list the factors, both favorable and unfavorable, which in their opinion would most strongly affect the course of business during 1931.

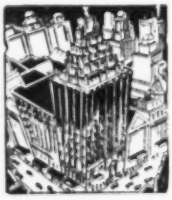
Favorable factors most frequently mentioned were, in the order named: low inventories in the hands of dealers; deferred buying to meet accumulated consumer needs; low interest rates; the prospect of extensive public works and private building, and the belief that commodity prices have touched bottom.

The chief unfavorable factors mentioned were: unemployment; low prices of farm products and other raw materials; bad conditions abroad; instability of prices; bank and commercial failures and "depression psychology."

The latest Business Bulletin of the Cleveland Trust Co. says in part concerning the prospects for 1931:

"It now seems likely that business recovery will begin as a combination of many minor improvements, and that it will be accompanied by the developments that normally occur in such a period. These should include rising trends for short-term interest rates, bond prices, and stock prices, and advances before the end of the year in wholesale prices, and industrial employment. Some increases over 1930 seem probable in building construction, iron and steel output, and the production of automobiles.

"Increases are probable in our export and import trade, the net profits of railroads and utilities, and, unfortunately, in the total numbers of business insolvencies. The year 1931 will probably be a year of slow business recovery, with activity not getting back to normal by the end of the year. There seems to be fair prospect, however, that it will be characterized by progressive improvements, instead of by recurrent declines.



NEW YORK

Pre-Inventory Lull Prevails

DURING the past fortnight there has been the usual lull in specifications from wholesalers to plants, according to most manufacturers, in view of the approach of the end of the year and inventory. Wholesalers state that miscellaneous requirements of contractors are holding up well, there being a considerable demand for repair work in both heating and plumbing.

During the past week a price advance in enameled ware, boilers and radiation was put in effect by several manufacturers, and wholesalers promptly revised their quotations to correspond. It is stated that a considerable amount of business has been placed by contractors and wholesalers alike in anticipation of the advance.

Credit conditions are reported by many wholesalers to be steadily improving and in most instances past due accounts are said to be lower at the present time than they were a year ago, not only in absolute amounts but also after making allowance for the lower turnover experienced during the past quarter.

Export business has shown no tendency to increase in volume, it is stated by exporters, inasmuch as financial conditions abroad remain very unsettled; nevertheless, it is felt that a large back-log of business is available for immediate placement once the present situation is remedied.

In the suburban areas and Upper New York State there is but slight activity apparent as the year draws to a close, according to most reports. On the other hand, in the industrial areas there is a substantial amount of repair work being done in manufacturing plants during the inventory shut-downs, with consequent demand for replacement materials.

In general it may be stated that inventories are universally low on all items both among wholesalers and manufacturers; this, in the opinion of many, presages an active demand for materials after the turn of the year. In fact, it is reported that several wholesalers found shortages in their

stocks during the past few days and were obliged to borrow materials from other wholesalers in order to make prompt delivery of contractor specifications. While such occurrences are frequent at the end of the year, it is felt by many that such borrowing has taken on unprecedented proportions during the course of the past ten days or two weeks in this section.

Awards for new construction of all types in the metropolitan area of New York during the week from December 6 through December 12 totaled $9,192,100, according to F. W. Dodge Corporation. This brought the total for December to date to $17,252,500, which was at the rate of $1,568,400 per business day; in November the daily rate was $2,465,300, while in December, 1929, the rate of contract-letting was $4,243,600 per business day.

The contract record for the first eleven business days of the current month showed $9,832,000 for new residential buildings; $5,439,000 for non-residential structures; and $1,981,500 for public works and utilities. For the year to date contracts awarded for new construction of all types in the area amounted to $993,653,900, as compared with $1,196,578,500 for the corresponding period ended December 13, 1929.

MIDDLE ATLANTIC

New Buying Is Scarce

WHOLESALERS in the Middle Atlantic section have restricted their purchases to only the necessary materials required by their contractor customers, as they approach the inventory taking period. This is the normal procedure at this time of the year, and, according to the manufacturing interests interviewed, their volume of orders received have naturally been affected very appreciably. Contractors have likewise experienced a curtailment of activity during the past two weeks, reflecting their quiet business condition to the jobber in the form of retarded inquiries and commitments.

Dealers report that present sales consist largely of heating materials going into consumption for remodeling work, actuated by the recent cold snaps, but they also note that these volumes have noticeably been decreased since the latter part of November. Sales of plumbing fixtures during the past two weeks have been practically negligible, with the exception of the forwarding of materials ordered earlier for specific new projects.

While few persons reporting were prone to prophesy on business for the new year, a number expressed the opinion that a trend for the better would occur. The reasons advanced were that much renovation work and many contemplated new building projects would go ahead during 1931. It is felt that people have purposely put off the purchase of new plumbing and heating for old buildings due to general conditions, and that the added year's depreciation would make the purchase of such materials an absolute necessity during the coming months. It is also believed that many of the projects planned for this year and abandoned will be financed during the coming year, stimulating greater demands for goods.

A few price changes were announced during the fortnight by producers of major commodities. The changes occurred in boilers and radiators, enameled ware and brass pipe. Boiler and radiation prices were increased by manufacturers approximately five per cent. The increase in enameled ware prices varied with different items, the entire change approximating probably ten per cent. Brass pipe quotations declined in the neighborhood of three-quarter cent per pound.

The higher quotations stimulated business in the respective commodities to some small extent, mostly for future delivery, it is reported. Pipe tonnages shipped during the fortnight were retarded in comparison to the previous two week period, with the exception of wrought iron, which showed an increase in sales for December, according to one maker. The movement of plumbers' brass goods and soil pipe was reported as moderate by representatives, and range boilers, pottery, and fittings were characterized similarly. Wholesalers experience little difficulty in securing prompt forwarding of goods ordered from manufacturers. All prices except those previously mentioned are unchanged.

Contract awards for November of this year, in the Middle Atlantic States, according to the F. W. Dodge Corporation, totaled $24,840,300, as against $32,438,900 for October, 1930, and $41,363,000 in November a year ago. Contracts awarded for the 46th week from December 1st to the 5th show a total of $14,813,000, of which $7,146,600 was awarded for non-residential construction and $5,413,600 for public works and utilities. The total for the 47th week reveals a very substantial decline in the valuation of contracts awarded consisting of only $3,038,100.

SOUTHEAST

Buying Pace Is Moderate

REPORTS from the various jobbing centers in the Atlanta territory indicate that plumbing and heating business for the past fortnight was of a moderate nature, and the seasonal decrease which usually prevails during December followed its usual course.

Sales, while slightly irregular in some lines, were, taken as a whole, rather even throughout the territory. There was little change in master plumbers' requirements since our last review, and most observers believe that the moderate pace set for the first half of December will prevail until after the turn of the year.

Architects and engineers report that while several large construction projects are in the preliminary stages of design, they do not feel that actual construction will start until late winter, or until general business has indicated a definite upward trend.

While construction totals for No-

vember were the lowest in Atlanta in several years, advices from the building inspector's office are in effect that December will show a slight increase over the previous month. That is contingent upon, of course, if permits maintain the same pace in the latter half of the month. A small increase in residential construction was reported, while commercial and industrial projects continue to lag.

In regard to general business in this section, bank deposits are increasing and savings accounts are larger than usual. Banking circles report a better situation in credit, and freight car loadings are making a better showing. As is true in plumbing and heating lines, general business shows that stocks are at a minimum.

Local jobbers report a larger turnover in boilers and radiators, and, as was true last month, the heating line continues to lead in sales. Pottery, enameled ware and other finishing items continued to move slowly. Little extra buying was reported in the various pipe lines.

Since our last review a number of enameled ware manufacturers have announced an advance in their prices to jobbers. Several makers of boilers and radiators have also announced higher prices.

Factory commitments were light and generally specified small quantities. Local jobbers are depending largely upon the quick shipping facilities of the manufacturer. In consideration of the nearness of the inventory period, little buying is being done by jobbers at the present time.

Factory shipments are prompt and regular on all staple items, and there was no report of any delays.

PACIFIC COAST

Government Projects Hold Promise

THERE appears to be a further decline in business activity as the year comes to a close, and while this seems general in most Coast jobbing centers it is more pronounced in some sections.

In many sections of Pacific Coast governmental agencies are fostering public works of various types, including public buildings, which are expected to have a beneficial effect on the plumbing and heating industry. Seasonal influences at this period of the year have a tendency to slacken new work to some extent and some of the more progressive members of the trade are turning more and more to the remodeling field and are securing a nice amount of business from this source.

The advent of natural gas in many of the Coast cities has opened a large field in both water heater and house heating prospects, which many of the trade are taking advantage of with good results. Most Coast distributors of plumbing and heating material have adjusted their stocks to take care of the trade's current needs without delay, and distributors' prices of material, while generally following replacement costs, are more firm in some sections than in others.

During the past week several manufacturers announced an advance in

THE STOCK MARKET

Range for Week Ending December 20, 1930†

Par Value	1930 High	1930 Low		*	Weekly High	Weekly Low	Weekly Close
NP	156⅜	87½	Air Reduction Sales Co	A	102½	87½	100⅜
NP	39¾	15⅛	American Rad. & Stand. San. Corp	A	17⅜	15⅛	16½
25	100⅞	29	American Rolling Mills Co	A	33	29¼	31⅜
50	81½	25	Anaconda Copper Mining Co	A	29½	25	27
NP	46½	21	Bastian-Blessing Co	C	24⅜	21	22⅝
NP	110¼	49⅛	Bethlehem Steel Co., Com	A	55½	49⅛	53
100	134	112¾	Bethlehem Steel Co., pfd	A	116¾	112¾	115
NP	30⅜	10	Brunswick-Balke-Collender Co	A	10⅜	10	10
NP	112⅜	33⅞	A. M. Byers Co., com	A & E	42⅜	33⅛	41
100	114	106	A. M. Byers Co., pfd	A & E	106	106	106
100	127½	102½	Century Electric Co., com	F	103½	103½	103½
50	4¾	¾	Chicago Nipple Mfg. Co., "A"	B	¾	¾	¾
50	1½	1	Chicago Nipple Mfg. Co., "B"	B	1	1	1
25	45	39¾	Crane Co., com	C	40	40	40
100	119½	113	Crane Co., pfd	C	115¼	114½	115¼
20	21	4⅞	Eagle-Picher Lead Co	H	6	4⅞	6
NP	39¾	3⅞	Fairbanks Co., pfd	A	4	3⅞	4
NP	50½	21⅞	Fairbanks, Morse & Co., com	A	22	21⅛	22
100	111½	102	Fairbanks, Morse & Co., pfd	A	103¼	103	103
NP	20	10⅜	Greenfield Tap & Die Corp	B	11⅛	10⅜	10⅜
NP	29	14⅜	Iron Fireman Mfg. Co	C	15⅜	14⅜	15¼
NP	148⅜	48¾	Johns-Manville Corp., com	A	58½	48¾	57
100	123¼	117½	Johns-Manville Corp., pfd	A	117½	117½	117½
100	123½	118	Jones & Laughlin, pfd	A & E	120	118	119⅞
NP	76¾	38	Minneapolis-Honeywell Reg. Co., com	A	40	38	40
NP	73	33½	Moline Mfg. Co	B & C	34⅜	33½	33½
NP	34	14¼	Motor Wheel Corp	A	15¼	14¼	15⅛
100	189½	114	National Lead Co., com	A	116	114	116
100	144	135	National Lead Co., pfd. "A"	A	141	135	135
100	119⅞	116	National Lead Co., pfd. "B"	A	119	118	118

Par Value	1930 High	1930 Low		*	Weekly High	Weekly Low	Weekly Close
NP	4⅛	½	National Radiator Corp., com	A	½	½	½
NP	11	1¾	National Radiator Corp., pfd	A	2¼	2	2
5	31⅜	13	Herman Nelson Corp	B	15	15	15
NP	76	59⅜	Ohio Brass Co., "B"	B & G	60	59⅜	60
NP	30	5¼	Revere Copper & Brass, Inc., com	A	8	5¼	8
NP	104	85	Revere Copper & Brass, Inc., pfd. "A"	A	85	85	85
NP	3	¾	Richmond Radiator Co., com	B	1	1	1
NP	12	3½	Richmond Radiator Co., pfd	B	4½	3⅞	3⅞
NP	33	21	Ruud Mfg. Co	C	24	23¼	24
NP	37¾	19⅞	Spang, Chalfant & Co., com	A	26¼	24½	24½
100	96	92	Spang, Chalfant & Co., pfd	A	93½	93½	93½
NP	32½	14½	Time-O-Stat Controls Co., "A"	C	17½	14½	17
NP	106⅜	52½	Union Carbide & Carbon Corp	A	58¾	52½	57
20	38⅛	18½	U. S. Cast Iron P. & F. Co., com	A	28¼	26½	26½
NP	21	15⅜	U. S. Cast Iron P. & F. Co., 1st pfd	A	18	18	18
NP	21¼	18½	U. S. Cast Iron P. & F. Co., 2nd pfd	A	21⅜	21⅛	21⅛
NP	55	23	U. S. Radiator Corp., com	B & D	25	25	25
100	100	100	U. S. Radiator Corp., pfd	D	100	100	100
NP	35	11	U. S. Rubber Co., com	A	14¼	11⅛	13¾
100	63⅞	19½	U. S. Rubber Co., pfd	A	25	19½	24
100	198¾	134⅜	U. S. Steel Corp., com	A	141¾	134⅜	140⅝
100	151¼	140	U. S. Steep Corp., pfd	A	143	140	141⅞
NP	9	2	Universal Pipe & Radiator Co	A	2⅛	2	2⅛
NP	42	10⅜	Walworth Co	A	12⅜	10⅜	11⅞
NP	19½	5	Wayne Co., com	B & C	5⅜	5	5
NP	39	17	Wayne Co., pfd	B & C	18	17	17
100	110	93	Wheeling Steel Corp., com	B	110	108	110
100	135½	131½	Wheeling Steel Corp., pfd. "A"	B	133	133	133
NP	20¾	16	Williams Oil-O-Matic Htg. Corp	C	16	16	16
NP	150¼	69½	Youngstown Sheet & Tube Co	A	69⅞	69½	69½

*Where listed—

A—New York Stock Exchange
B—New York Curb Exchange
C—Chicago Stock Exchange
D—Detroit Stock Exchange
E—Pittsburgh Stock Exchange
F—St. Louis Stock Exchange
G—Cleveland Stock Exchange
H—Cincinnati Stock Exchange

†If there is no trading during the current week, range represents last week recorded.

The Metal Market

	Dec. 23	Average Oct., 1930	Average Aug., 1930	Average 1929
PIG IRON—				
No. 2 foundry, Chicago	$17.50	$17.50	$17.50	$20.00
PLATES AND SHEETS—				
Steel boiler plates, Pittsburgh, per lb.	1.60c	1.60c	1.65c	1.93c
Blue annealed sheets, No. 13, Pittsburgh, per lb.	2.05c	2.15c	2.15c	2.17c
Black sheets, No. 24, Pittsburgh, per lb.	2.35c	2.40c	2.50c	2.85c
Galvanized sheets, No. 24, Pittsburgh per lb.	2.90c	3.00c	3.10c	3.57c
TIN—				
Straits tin (spot)	25.70c			
LEAD—				
E. St. Louis	4.95c			

The Old Metal Market
Dealers' Buying Prices

	Per lb.		Per lb.
Aluminum clippings	12 c	Copper, light	6½c
Block tin pipe	18¾c	Heavy copper and wire	7½c
Brass, light	4 c	Faucets and valves	7 c
Brass, heavy yellow	4¾c	Lead, heavy	3¾c
No. 1 comp. red brass	6½c	Solder joints (close cut)	6¾c
Heavy crucible copper	7½c		

NOTE: Prices are those quoted on Tuesday of this week.

their prices to jobbers on enameled ware, which had a tendency to bring out orders for this commodity which the trade had been withholding purchasing until actually required. Pottery and plumbers' brass goods moved at a fair rate, with little, if any, noticeable change in the past fortnight.

Rough materials such as steel and wrought iron pipe and soil pipe continue to move in about the same volume as they have maintained for several weeks past.

NEW ENGLAND

Outlook Is Promising

MASTER plumbers and heating contractors in the New England area were reported as having derived from the past several weeks activities no particular amelioration of their heretofore mediocre volumes. Representatives of wholesalers and manufacturers also found that the present quiet status of building conditions has reflected in their sales in such manner as to considerably depreciate their December averages. On the other hand, there has prevailed a much broader interest insofar as the inception of new construction is concerned, which, however, does not for the time being affect employment of journeymen labor, nor materially increase movements of plumbing and heating materials. In the state of Massachusetts building permits attained a total of $7,862,664, exceeding those of the corresponding month of 1929 by more than three and a half million dollars. Figures compiled from the monthly survey of S. W. Straus & Co. indicate that Massachusetts was third among 12 leading states.

With $1,125,000 worth of school construction work awarded in the past six weeks, the department of school building of the city of Boston is rushing the remainder of its building program, expecting to have on the market within a few months additional work totaling $1,900,000 in its effort to relieve the unemployment situation. In addition to furnishing work which is to benefit the plumbing and heating industry and the building trades in general, the department has effected considerable financial savings, because of the comparatively low market level of commodity prices and the wide competition which makes low prices possible, thus coming between 35 and 40 per cent below appropriations. From daily construction reports it is also noted that there is a gradual expansion in proposed new building of state institutions. There is little to be said at the present writing of residential developments, for this class of work, which generally engages the average master plumber and steamfitter, continues at a comparatively low ebb. Competition is decidedly keen among the plumbing and heating trades and individual anxiety to procure enough work to keep going quite often results in the margin of profit being considerably shortened. This same competitive condition also exists among wholesalers and manufacturers but usually not accompanied by such drastic price cutting. Credit men say that collections are not as slow as one might expect to prevail in this period of inactivity and cutting of the average margin of profit.

With very few large developments having reached the stage at which soil pipe installations are necessary, master plumbers evinced no particular interest insofar as their withdrawals from jobbers' stocks were concerned. Distributors' disposals of steel pipe to heating contractors continued fair but no spirited buying movements prevailed. Wrought iron pipe consumption is not sufficiently active as to hold a main position of interest. The majority of brass pipe producers announced a decline in prices since the last report. This action had no particular effect on the volume of makers' sales, yet it did tone up a lagging interest on wholesalers' parts. Demand for fittings is more or less sporadic, cast iron items moving from jobbers' hands in manner somewhat steadier than brass and drainage fittings.

The majority of enameled ware manufacturers announced advances in their prices to wholesalers during the past fortnight. This price increase was not uniform throughout the entire line, some items being more sharply advanced than others. Makers' representatives' bookings were more active than they had been for some time, including commitments by distributors for stock purposes and the placement of orders for specific operations which had been withheld up to the time of the price advance. Potters' sales are not as brisk as they usually are at this time of year, the bulk of the business being transacted between pottery representatives and jobbers including only a scattering of colored ware orders and special ware for such operations which are presently nearing the consummation stage. The light demand for plumbers' brass goods exemplified in contrac-

tors' calls upon jobbers is largely accountable for the reports of most brass salesmen of light bookings and consequent moderate movements into this territory from manufacturing points. The average report from producers of range boilers is to the effect that no spirited buying movement obtains. Price advances were effected since the last report by the majority of manufacturers of house heating boilers and radiators. Distributors were afforded protection on their outstanding contracts which resulted in a much increased volume for makers.

The majority of wholesalers in this section hold their annual inventory taking on January first and it is generally found that stocks have been pared to a minimum. The close-range buying policies of jobbers throughout the whole year made it a simple task to reduce stocks during the last month and at the same time to have sufficient assortments to render uninterrupted delivery service to their trade. Most sources had anticipated far enough ahead and were in the possession of sufficient reserves to grant quick shipments of carload or less quantities of material to jobbers' warehouses, when material was needed in a hurry.

Building Declines Are Less Pronounced

ALTHOUGH the falling-off in proposed building and construction activities which was noted throughout the United States during October continued through the month of November, the declines were less pronounced than during the preceding month, according to official reports of building permits issued in 587 leading cities and towns and tabulated by S. W. Straus & Co.

Building permits totalling $131,871,594 were issued during November, compared with a total of $150,751,374 in October. This represents a loss of 12 per cent. In normal years a decline of about 8.9 per cent may be expected. October had shown a loss of 10% from September contrasted with a normal expectancy of a 5 per cent increase.

During November, 1929, permits issued were $194,289,502. November, 1930, thus showed a loss of 32 per cent from the same month of the previous year. October, 1930, had declined 40 per cent from October, 1929.

Twenty-five Leading Cities

The twenty-five cities reporting the largest volume of building permits for November showed an increase of 8 per cent above October. As a group, the twenty-five cities declined 22 per cent from November, 1929, and 40 per cent from the same month in 1928.

Thirteen of the cities showed individual gains over October. New York filed plans amounting to $41,667,765 during November compared with $26,406,153 in October. The other twelve cities showing gains were Seattle, Newark, Baltimore, Springfield, Mass., Cambridge, Mass., Dearborn, Mich., Pittsburgh, Portland, Ore., St. Louis, Syracuse, Dallas, and Davenport, Ia.

Fourteen cities, Seattle, Cleveland, Springfield, Mass., Cincinnati, Cambridge, Mass., Washington, D. C., Dearborn, Mich., Oklahoma City, Houston, Boston, Portland, Ore., Syracuse, Dallas, and Davenport, Ia., went ahead of November, 1929. Seattle, Springfield, Mass., Cambridge, Mass., Dearborn, Mich., Oklahoma City, Pittsburgh, Portland, Ore., Syracuse, Dallas, and Davenport, Ia., gained over Nov., 1928.

The Straus Index

The Straus index of building permits was 38.0 for November as compared with 45.2 for October and 56.0 for November, 1929. The index has thus reached the lowest point of any month this year. The index, after adjustments for seasonal variation, is still 16.8 per cent below the general trend, which has been persistently downward since the middle of the year 1926.

The Labor Situation

The Department of Commerce reports that 3,400,000 workers are unemployed. In order to ameliorate the unemployment situation in the building trades, local unions are proposing the stagger system, a shorter week, and a shorter day so as to obtain

TWENTY-FIVE CITIES REPORTING LARGEST VOLUME OF PERMITS FOR NOVEMBER, 1930, WITH COMPARISONS

	November, 1930	November, 1929	November, 1928	October, 1930
1. New York (P. F.)	$ 41,667,765	$ 46,917,922	$ 52,719,563	$ 26,406,153
2. Los Angeles	4,784,444	6,679,288	6,600,000	5,309,181
3. Chicago	3,756,200	15,338,900	19,999,300	6,421,700
4. Seattle	3,024,675	1,245,950	1,436,075	1,533,340
5. Detroit	2,587,493	4,880,017	8,995,438	2,970,393
6. Cleveland	2,491,700	1,805,300	3,070,350	7,073,175
7. Philadelphia	2,280,085	8,024,640	6,201,220	4,911,690
8. Newark	2,168,490	2,978,184	4,053,046	480,719
9. Baltimore	1,946,160	2,232,800	2,082,960	1,941,360
10. Springfield, Mass	1,864,225	509,495	240,865	265,575
11. Cincinnati	1,811,230	1,509,495	2,100,640	3,491,265
12. Milwaukee	1,741,485	3,571,151	3,629,467	2,789,890
13. Cambridge, Mass	1,610,908	133,545	555,938	234,145
14. Washington, D. C	1,477,220	1,040,320	7,199,890	2,191,665
15. San Francisco	1,313,672	2,487,796	4,220,382	2,292,210
16. Dearborn	1,311,275	463,852	510,589	1,032,335
17. Oklahoma City	1,300,000	1,193,925	1,238,607	2,171,245
18. Pittsburgh	1,296,990	2,746,697	1,133,519	806,088
19. Houston	1,215,980	1,152,084	3,364,876	1,368,434
20. Boston (P. F.)	1,182,311	952,358	6,762,936	3,046,022
21. Portland, Oregon	992,960	919,200	811,485	604,310
22. St. Louis	962,926	1,432,749	2,768,281	765,100
23. Syracuse	947,749	777,836	797,115	454,265
24. Dallas	883,879	531,217	717,617	609,942
25. Davenport, Iowa	793,018	104,875	80,478	107,327
	$ 85,412,840	$109,629,596	$141,290,637	$ 79,277,529

(P. F.) Indicates Plans Filed.

work for each member if only for two or three days a week.

Building Materials

During the month of November, Portland cement prices dropped 5 cents per barrel in Boston, 25 cents in New Orleans, and 53 cents in Kansas City. Reductions were made in prices of common brick of $1.00 per 1,000 in Boston, and $1.50 per 1,000 in Cincinnati while a price increase of $1.00 per 1,000 was made in Dallas. Structural steel shapes increased 15 cents per 100 pounds in Dallas. Price increases in long-leaf yellow pine delivered in Manhattan are due to an announcement of a rise in intercoastal steamship freight rates to take effect in January, 1931.

Architects Find Big Need For New Buildings

THE board of directors of the American Institute of Architects meeting in Detroit on November 14 adopted the following statement on the building situation presented to it by its president, Robert D. Kohn of New York:

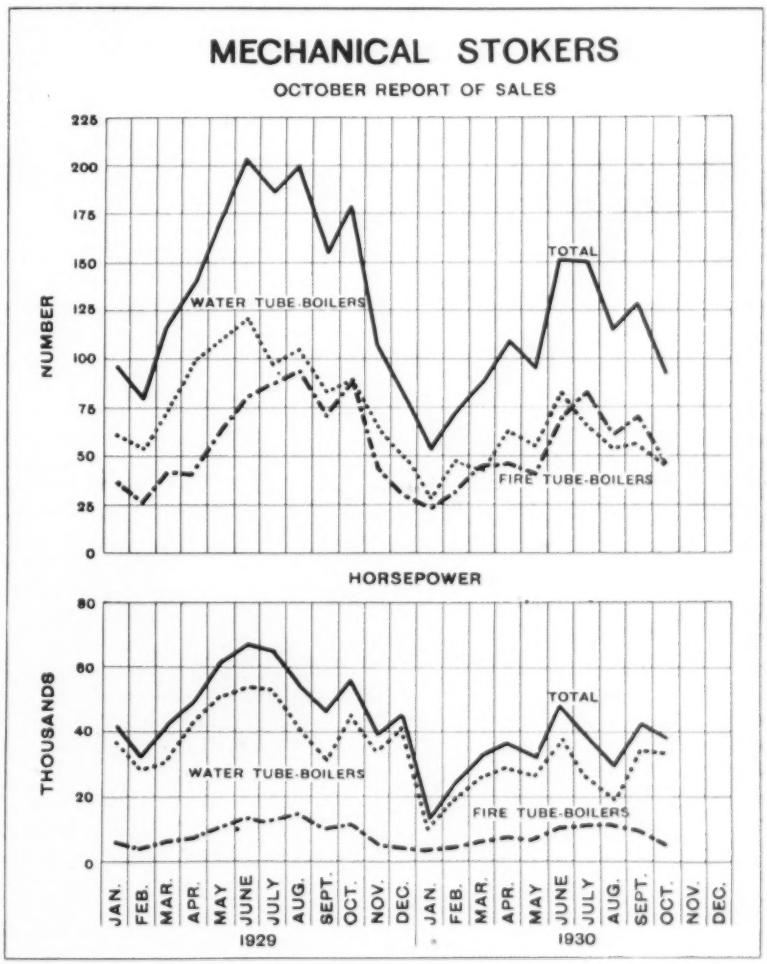
"The unemployment problem is a serious one in all parts of the country. An excellent committee, meeting in Washington under the chairmanship of Colonel Woods, is trying to find ways to meet the emergency. One of its recommendations is that we must speed up the public works programs of cities, states and the Federal Government. We can help in that direction, but in other ways as well.

"Building costs are low, lower than they have been for years. Labor is anxious to work, and efficient. This is surely an excellent time to go ahead with building wherever there is an immediate need for space or one that will exist within the next few years. Why not take advantage of the low prices? There are many hospitals, schools, and other institutions which need new buildings or rebuilding or alteration. Private residential work and housing of other kinds are much needed in certain parts of the country. For all such work the present time is most propitious. It is variously estimated that costs are down from twelve per cent to eighteen per cent on ordinary construction from the high of 1929 and in certain parts of the country on some types of work the cost is down twenty per cent.

"We have heard of a number of corporations that have acted promptly on this situation. An important educational institution in the middle west is starting its building program, paying interest on borrowed money (in advance by two years on the proceeds of a bond issue) because the interest charges of this borrowed money will be more than met by the saving in building costs. And this institution will have the use of its new buildings two years sooner to boot.

"One difficulty in the present situation is that arising from the absence of plans for many of the projects for which appropriations have been made. Endless millions of dollars are available for federal, state, county and municipal projects, but for many building projects there are no plans and specifications. They should be promptly taken in hand and the architects of the country can surely be of assistance in getting them started.

"A prominent construction company reports: 'Not since 1922 have we constructed buildings at such low prices as during this year, and in my judgment, the moment it becomes clear that business is improving, depression prices for materials will be



October sales of mechanical stokers, as reported to the Bureau of the Census by the eleven leading manufacturers, totaled 92 stokers of 38,276 horsepower, as compared with 128 of 42,899 horsepower in September, and 178 of 56,108 horsepower in October, 1929. The above chart pictures sales of mechanical stokers for October, 1930

withdrawn and the cost of buildings will increase. There can be no better time than the present to consider the advantages of a new building — how much it will cost, when should it be started and how long will it take to build. These facts are essential for a sound decision.'

"We hope our suggestions in this direction will prove to be practical and hence of value. The Federal Government realizes that the situation needs prompt action for many reasons. But in the field of institutional and private building, too, the public has not realized its opportunities and its obligation to advance promptly all construction work so as to increase general employment. We urge upon established and growing institutions and businesses that they start their building projects not only because of this unemployment but because building costs are generally so favorable."

Bank Finds Business Signs Improved

SOME signs of improvement can be found, and a number of them are quite encouraging, reports the National City Bank of New York, in its monthly survey of business conditions. Definite assurance that the turn has taken place is lacking, however.

The disappointment resulting from the failure of business to stage a recovery of some sort this autumn has found reflection in the stock market, where prices, which have been holding up on expectations of an early recovery in corporation earnings, have given way to new low levels more in keeping with the revised ideas as to the outlook for corporation profits. With the decline, states the bank, business sentiment has had another sinking spell that has tended to put a damper on recovery.

Thought on Bottom

"Considering the months of reaction now behind us, as well as the depths to which the decline has gone, there can be little doubt but that the depression in this country is scraping bottom," says the bank's report. "We do not believe business is likely to go much lower and we think the next important movement will be upwards. How soon that will take place cannot be foretold with certainty as that depends in large part on the degree of help or hindrance accorded the economic forces working to restore the balance.

"Usually, however, our industrial depressions of a severity comparable to this one have taken the form of a U-shaped curve—that is, business after passing through the declining phase has generally moved sidewise for a few months before commencing the climb back to normal.

Early Upturn Unlikely

"It will be recognized also that the coming months are not months in which decisive upward movements are likely to be initiated. During the winter building construction and outdoor work are slowed down, and traffic and trade over large sections of the country are hampered by the weather. Hence, unemployment seems likely to get worse before it gets better, both by reason of the slack season and the tendency for industry everywhere to reduce costs through greater use of labor saving devices and methods. Such conditions, while calling for wholehearted public support of unemployment relief measures should not lead to a distorted view of the business situation. If the falling off in activity proves to be no greater than usual for the winter season business can be counted as having made a gain."

According to the bank one of the factors which gradually is building the progress which industry is making in eliminating waste. It points out that under pressure of reduced volume of business and lower prices, business men have been going over their organizations with a fine tooth comb, with a view to finding means of improving methods, eliminating unnecessary manpower, and paring costs to the irreducible minimum.

Overdevelopment Claim False

"The idea that business in this country has reached a point of overdevelopment as to afford no more opportunity for the constructive employment of capital is a periodic one and has ever proved to be false," according to the bank. "That business has been overdone in some lines is unquestionably true, and this has disturbed the balance, thrown people out of work, and caused a slowing down of consumption which has given the impression of over-development in all lines.

"To cure this particular maladjustment takes a little time, but when that is done we are inclined to believe that the wants of the American people will be found to be as far from satisfied as ever. Apparently the United States Steel Corp., which is spending millions of dollars on plant expansion this year, does not subscribe to the doctrine of the saturation point, nor does Samuel Insull, who has recently announced a program of expending $200,000,000 on public utility developments in Middle West, nor do the projectors of the vast net work of gasoline and natural gas lines being extended over the country, nor the promotors of various other constructive undertakings who have the courage to go forward when others are hesitating.

Some signs of improvement in the business situation as noted by the bank are: Commodity prices have shown more stability; sentiment in the textile industry is more optimistic than in years; sugar is stronger; rubber is firmer; building construction figures made a better showing in September; automobile production is down but shows signs of moving counter to the customary seasonal downtrend.

Offsetting these signs of improvement and the bank points to declining steel production, and smaller carloadings reflecting reduced railway traffic. Loadings of merchandise and miscellaneous freight run 17 per cent. under last year, the lowest for any corresponding period since 1922.

Five complete welding outfits are available for the new class

San Francisco School Teaches Welding

SOME indication of the lively interest in welding on the part of the future journeyman plumbers of San Francisco, Calif., is shown by the fact that twenty men were anxious to join the newly formed class, although the initial equipment could take care of only ten.

This class constitutes part of the plumbing school work and is limited to journeymen and junior mechanics who have been receiving $8.50 a day for a year or more. The school is conducted by the Industrial Association of San Francisco and is located at 1120 Howard street. School work is carried on by the association in conjunction with the apprentice committee of the San Francisco Merchant Plumbers Association. The class in welding and cutting meets every Monday evening from seven to nine o'clock, and is made up of those who have proved to be better than the average type of journeymen and junior mechanics—those who have gained a high rating in their attendance as well as their examinations. These men should be able to make a fair weld in from six months to a year, depending upon their natural aptitude. They should be well grounded in the principles of the various operations by that time, according to Instructor J. C. Staudinger, who added that efficiency can be gained only through long practice.

"Beginners," said Mr. Staudinger, "are first taught the methods of assembling and disconnecting the equipment, the correct procedure to follow when setting up an outfit, the lighting of the torch and adjustment of the flame, the necessary precautions and safe practices when handling equipment and the correct way to hold the torch. From then on, it is largely a matter of practice under a variety of conditions."

School nights other than those devoted to the class in welding and cutting are taken up with plan drawing, blue print reading, estimating, trade mathematics and the study of city sanitary laws; and on Friday evenings the men are busy with their shop work, consisting principally of wiping, soldering, and caulking.

The apprenticeship committee of the San Francisco Association is made up of: Chairman Joseph Rohr, Alexander Coleman, W. P. Goss, Charles Mayer, William J. Turner, J. V. Young, William J. Monihan, Charles Noury and William J. Forster. This committee meets regularly with the staff of the Industrial

Instructor J. C. Staudinger demonstrates the use of the cutting torch

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◆

Certificates of Competency for Plumbers in England

In view of your recent article by William C. Groeniger, urging the desirability of Certificates of Competency for the promotion of better plumbing, you may be interested to know that in Great Britain the Worshipful Company of Plumbers are actually putting into practice the ideals which your contributor sets forth, writes A. Russell from London, England, to the editor of DOMESTIC ENGINEERING.

This most honorable and ancient Liveried Company is one of the surviving Craft Guilds that were introduced

F. Leonard Bishop

in England by William the Conqueror. England of the Middle Ages thrilled to their social and religious life. The Lord Mayor's Show of London has its origin in their gorgeous pageantry. Through the hundreds of years of its existence the Plumbers' Company has worked first and foremost for the promotion of really good workmanship. As early as 1365 its Ordinances give definite expression to this ambition:

> "That the competency of a plumber shall be certified by assent of the best and most skilled men in the trade, testifying that he knows how well and lawfully to work, and to do his work so that his trade may not be scandalized or the commonalty damaged or deceived."

In the early days there was the system of apprenticeship to serve the Company's aims; now there is the Registration Movement. One of the chief activities of this movement is the holding of examinations which demand a very high standard of practical workmanship and theoretical knowledge. A certificate is issued by the company to each successful candidate, carrying with it the degree of R. P. (Registered Plumber) and with the present recognition of the relationship of good plumbing to good health, the demand for these qualified men is becoming greater every year. Soon it is hoped that every recognized plumber in England will be at the same time a registered plumber, and the Company is anticipating parliamentary legislation on the point.

The master of the Company for the year 1930 is F. Leonard Bishop, F. R. G. S., managing director of the firm of Thomas & Bishop, Ltd., London.

California Contractors Study Costs

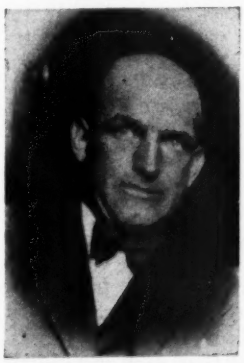
Survey shows that average net profit of contractors who participated was 2.4 per cent—Difference of 11.7 per cent in net profit found to exist between successful and unsuccessful operators

AN AVERAGE net profit of 2.4 per cent was made by the 49 merchant plumbers who reported recently to the cost data committee of the State Association of Merchant Plumbers of California on their business costs over the period of one year. It was further determined that a difference of 11.7 per cent in net profit existed between the successful operators and those designated in the study as unsuccessful.

J. B. Hawley of Sacramento, committee chairman

The committee, which was appointed at the 28th annual convention to study the operating costs of members of the association, is composed of J. B. Hawley of Sacramento, chairman; J. V. Young of San Francisco, and Charles M. Swinnerton of Los Angeles.

In submitting its report, the committee expressed its conviction that studies on the cost of doing business are of inestimable value to the members. It indicated that another questionnaire will be sent out at the end of this year, and urged the cooperation of a greater number of members.



J. V. Young of San Francisco, committee member

The 49 reports that were received came from all parts of the state and from men doing a business of from $10,000 a year to $1,000,000 a year. Table 1, which is based on the committee's study, shows the average percentage of operating costs, according to sales volumes. In compiling this, the item of interest on investments was not considered. But in reports received from shops doing the smaller volume, executive salary, where none was reported, was figured at $2,500 per year for those concerns doing a business of less than $15,000, and $3,000 for concerns doing a business ranging from $15,000 to $25,000. All concerns doing a business of more than $25,000 reported on executive salaries.

Table 2 shows the average percentage obtained by the 49 concerns which reported, as well as that obtained by the successful and unsuccessful firms. The average overhead for the 49 concerns reporting was 26.3 per cent, and the gross margin of profit figured was 28.7 per cent. In other words, these 49 concerns made an average of 2.4 per cent net profit. Comparing the successful firms with the unsuccessful, Table 2 indicates that the successful concerns were figuring 4.2 per cent greater gross margin, and that their overhead was 7.6 per cent less.

From this information the committee concluded that the merchant plumber who figures less than 48 per cent for material, 21 per cent for labor, and 31 per cent for gross margin is not in a position to obtain a fair profit.

C. M. Swinnerton of Los Angeles, committee member

According to Table 2, the concerns doing less than $50,000, who were among the successful ones, figured 43.8 per cent for material, 20.8 per cent for labor, and 35.4 per cent for gross margin. The successful firms doing more than $50,000 worth of business figured an average of 52.3 per cent for material, 21.9 per cent for labor, and 25.8 per cent for gross margin.

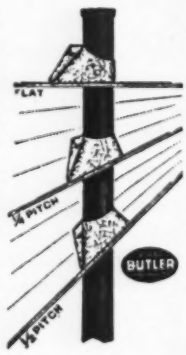
The reports further revealed that many master plumbers fail to figure in all of their actual overhead. Of the 49 reports received, 18 showed no allowance for non-productive labor, and only 13 showed a charge for small tools. Many shops did not report any depreciation on tools, automobile equipment, furniture or fixtures; while others charged an insufficient amount to this account.

Only 12 firms with a volume of business less than $30,000 showed a profit, while 19 showed a loss. The

Air-Tight Steel Tank Co.
PITTSBURGH, PA.

TANKS

TANKS FOR: High pressure gas and air storage—Pneumatic water systems—Gasoline and oil storage—Oil burning equipment—Open top—Welded. ATSCO Genuine Copper Brazed tanks for high pressure—the tightest, safest, strongest tank it is possible to construct by any known process. A.S.M.E. code tanks.



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Don't overlook the profit possibilities in selling roof flashings to remodeling jobs. Put them on any roof, of any pitch, any kind or any color. Greater satisfaction; more profit.

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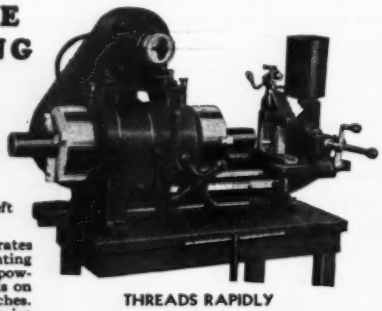
BUTLER MFG. CO.
Minneapolis • • Minn.

CUTS PIPE THREADING COSTS!



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Uses any standard make of solid square right or left hand pipe or bolt dies.

Weighs 250 pounds. Operates off either A.C. or D.C. lighting circuits. Is sufficiently powered to drive geared heads on the larger pipe, up to 6 inches. A real pipe machine at a price you can afford. Ask us about it today. Give us the name of your supply dealer.

PEERLESS MACHINE CO., Racine, Wisconsin
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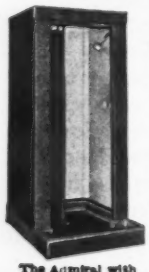
The Plumber's JOB-the Plumber's PROFIT



The Admiral with extended receptor and curtain

Fiat Shower Bath Compartments and Shower Doors

Whether building or remodeling . . . FIAT Shower Bath Compartments and Shower Doors mean double profits for you. Profit on the sale and Profit on the installation.

FIAT Shower Compartments are made in many sizes and designs . . . are of knock-down construction and can be installed on rough or finished floors. Permanent . . . absolutely leak-proof. Easy to install.

Write for full particulars.

FIAT METAL MFG. COMPANY
1211 Roscoe St. Dept. 6122 Chicago, Ill.

firms showing a profit did so on account of securing a higher gross margin with considerably lower overhead costs.

Of the concerns doing more than $50,000 worth of business, those in the group from $100,000 to $150,000 made the best showing, as every concern in this group reported a fair profit.

The report shows that the percentage of labor to gross volume varies but little in all the different classes, which, according to the committee, indicates efficiency in this respect. Since labor is more or less an uncertain item of cost on any job, the committee feels the master plumber can determine in a general way whether or not he is getting his labor performed as economically as possible by checking his work sheet against the information in this report.

The committee recommended that each individual master plumber make a thorough analysis of his business as to material costs, overhead costs and gross margin, and compare this with the data in the accompanying tables. In this way he can determine if he is out of line in any particular phase of charging costs.

Table 1

Average Percentage of Operating Costs According to Sales Volume

	Under 15,000		15,000 to 25,000		25,000 to 40,000		50,000 to 75,000		100M to 150M	Over 200,000	
*	U	S	S	U	U	S	U	S	S	S	U
Reports Received	5	4	1	5	9	7	4	3	6	1	4
Material	51.5	42.	36.1	50.7	48.	46.	53.	52.4	52.5	51.3	60.8
Labor	18.1	18.6	21.3	18.7	25.1	21.9	20.2	25.1	21.5	14.6	22.
Overhead	36.6	33.3	30.	36.5	28.9	22.6	26.7	15.9	16.9	16.4	17.5
Gain	.....	6.1	12.6	.....	.....	9.5	.1	6.6	9.1	17.7	.....
Loss	6.2	.....	.....	5.9	2.	.....	.....	.....	.....	.....	.3
Gross Marg.	30.4	39.4	42.6	30.6	26.9	32.1	26.8	22.5	26.	34.1	17.2
Executives Salary	19.8	16.4	15.	16.	11.9	8.	7.5	4.5	5.	4.3	2.
Other Overhead	16.8	16.9	15.	20.5	17.	14.6	19.2	11.4	11.9	11.6	15.5
Miscel. Office	2.4	2.8	1.4	2.3	1.7	1.9	1.4	.9	1.2	.6	2.
Office Salaries	1.6	4.5	5.5	2.6	2.7	2.4	5.6	1.6	2.5	5.7	3.4
Auto Expense	2.4	2.2	1.1	2.8	1.9	1.7	1.8	1.1	1.2	.1	1.2
Ad. and Dons	1.2	1.7	.7	1.2	1.	1.0	1.4	.4	.6	.2	.1
Dues	.4	.6	.3	.6	.3	.4	.4	.....	.2	.1	.1
Interest	.5	.2	.....	1.4	.4	.3	.9	.2	.1	.....	.9
Legal Expenses	.1	.2	.....	.3	.....	.1	.2	.4	.....	.2	.1
Taxes	.3	.....	.....	.9	.8	.4	.7	.5	.4	.2	.5
Miscel. Sta'y Exp	.....	.....	1.1	.5	.3	.....	.....	.3	.2	1.4	.2
Allow. Bad Accts	.7	.....	.....	.8	.7	1.3	.6	1.0	.8	.2	.2
Non-Pro. Labor	.3	.....	.7	1.3	1.5	.7	1.7	1.4	1.2	.8	4.9
Insurance	.5	.3	.....	.8	1.0	.7	.9	.6	.7	.2	.5
Rent	4.5	3.5	3.4	3.4	2.9	2.2	2.3	2.3	1.5	1.3	.8
Depreciation	1.8	.7	.6	1.6	1.2	1.1	1.1	.7	.9	.6	.5
Tools	.1	.2	.2	.....	.1	.1	.....	.....	.4	.....	.....
Shop Expense	.....	.....	.....	.....	.5	.5	.2	.....	.....	.....	.1

*U—Unsuccessful.
S—Successful.

Table 2

	All Firms	Successful Firms	Unsuccessful Firms
Number of Reports	49	22	27
Material	50	47.7	51.8
Labor	21.3	21.3	21.3
Overhead	26.3	22.1	29.7
Gain	2.4	8.9	.....
Loss	.....	.....	2.8
Gross Margin	28.7	31.	26.8

Master Plumber Elected Sheriff

G. J. Frick, of Frick Plumbing Co., Marion, Ill., took the oath of office on December 1, as sheriff of Williamson County, Ill. Mr. Frick was elected to the office of sheriff by a four to one majority on November 4, after having been prevailed upon to accept the nomination, by delegations from the Rotary Club, Lions Club, Chamber of Commerce, Kiwanis Club, and others from Herrin, Johnston City, Marion, Carterville and other important towns in the county. Mr. Frick has been very active in association work, and in securing the passing of plumbing ordinances in the various towns of southern Illinois. He was also instrumental in forming the Southern Illinois Master Plumbers' Association.

G. J. Frick

◆

Orange, N. J., Masters See Motion Picture

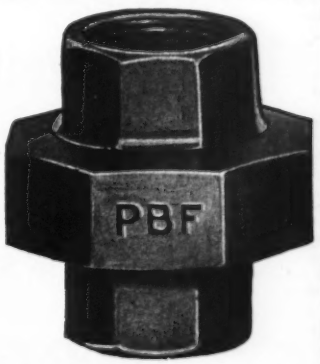
Motion pictures showing the production of steel sheets were exhibited recently by the Youngstown Sheet and Tube Co., Youngstown, Ohio, at a meeting of the Master Plumbers' Association of Orange, N. J. E. E. Ellwood of the New York office of the company presented the pictures along with others which he took this year of delegates and their families at both the New Jersey State convention in New Brunswick and the National meeting in Boston. The members of the Orange Women's Auxiliary were present and served a buffet supper. George W. Brenner, president of the association, presided at the meeting, and A. C. Trapper, chairman of the entertainment committee, made the arrangements. Mr. Ellwood was accompanied by Mrs. Ellwood and W. A. Doris of the sales department of his company and Mrs. Doris.

◆

Plumbing Short-Course to Open at Madison, Wis., Feb. 9

The Wisconsin Master Plumbers' Association is arranging and sponsoring a short course in plumbing for master plumbers, plumbing instructors and plumbing inspectors, to be held at Madison, Wis., February 9 to 20, 1931, according to Lewis R. Friend, of Milwaukee, president of the association. "The course will be a ten-day course," said Mr. Friend. "It will begin Monday, February 9, and will continue through until Friday, and then it will begin again the following Monday and continue through a second five-day week. The registration fee will be $10."

A series of monthly meetings for members of the plumbing trade of Green Bay are being held in that city at the Green Bay vocational school, and also in Fond du Lac, Wis. Special demonstrations are held in connection with the meetings, and Carl Runge,



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PHOENIX FITTINGS

Every Fitting
Air Tested
Under Water

PHOENIX BRASS FITTINGS CORP., IRVINGTON, NEW JERSEY

FLOOD CONTROL! *for every basement*

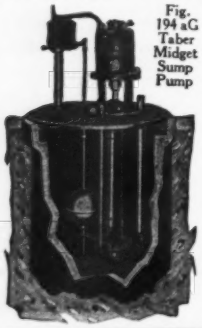

Fig. 194 aG Taber Midget Sump Pump

New LOW PRICES now remove the only possible objection to Taber Sump Pumps.

A Taber Sump Pump installation is Positive Automatic Relief from flooded conditions in basements.

Once installed, Taber Sump Pumps need no servicing . . . thus they will save you money.

Write for description and prices. See Page 923, Domestic Engineering Plumbing and Heating Catalog.

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TABER PUMP CO. *Est. 1859*
290 Elm Street, Buffalo, New York

E-Z RADIATOR HANGERS *for* **ALL Radiators**

Easily and Quickly Installed

Saves Time and Labor

Style "C"

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Also Manufacturers of E-Z INSERTS and E-Z LAVATORY HANGERS

Happy New Year

The Novelty Steam Boiler Works Co.
Clare and Kloman Sts., Baltimore, Md.
Mfrs. of
ARROW Steel Tanks
TRADE MARK

***The* SUPERIOR Shower Head**
Spray Adjustable Fine or Coarse
Price 55c and up
Sold by Leading Jobbers
JUDELL
MILWAUKEE FLUSH VALVE CO.
Milwaukee, Wisconsin, U. S. A.

specialist on repair work, is giving also a series of discussions on salesmanship. He is assisted by M. M. Hanson, itinerant plumbing instructor.

◆

Alameda County, Calif. Association Elects Secretary-Manager

W. Herbert Graham of Oakland has been elected to the office of secretary-manager, on a part-time basis, for the Alameda County Merchant Plumbers Association whose headquarters are located at 538 Twenty-fourth street, Oakland, Calif. Mr. Graham has been engaged in the plumbing and heating field in Oakland for the past twenty-eight years, his place of business being situated at 1128 Webster street. He has always taken a leading part in association affairs, and of late years he has been especially active along constructive lines identified with the industry, notably in the home modernizing movement. Among his other activities, Mr. Graham is at present serving as a member of the Gas Appliance Committee of the Bay Counties Conference.

W. Herbert Graham

◆

Queens Masters Will Hold First Dance March 14

The Master Plumbers' Association of Queens, L. I., New York City, is preparing to hold its first dance and entertainment on March 14, 1931, at the Triangle Ballroom, Richmond Hill, N. Y. Joseph R. Mittasch, having been made general chairman, named four committees to assist. These are: Dance and program, with George W. Harrington and Jacob F. Eck serving. Floor and entertainment, with Jacob Stockinger, Jr., director, assisted by all district representatives. Reception and ticket, John F. Rogers, Thomas F. Whalen and Joseph N. McNamara. Printing, Nicholas P. Donohoe and Adolf Oerter.

◆

Wilmington M. P. A. Elects Officers

At a meeting of the Master Plumbers' Association of Wilmington, Del., held on December 2, officers and directors were elected for the ensuing year as follows: Albert E. Hayman, president; William F. Dorsey, vice president; James Wharry, treasurer; James J. Olivere, J. Harold Mousley, Thomas W. Motherall, James P. Ponsell and Paul Middleton, directors.

◆

Tri-City Development League Holds Meeting

The Tri-City Plumbing and Heating Trade Development League held a "holiday surprise" meeting on Wednesday evening, December 17, at the Blackhawk Hotel grill room, Davenport, Iowa. Dinner was served before the meeting. The educational program for the evening was in charge of H. Walter Taylor, representative of the Mueller Brass Co., Port Huron, Mich. Mr. Taylor showed the process of making the connections

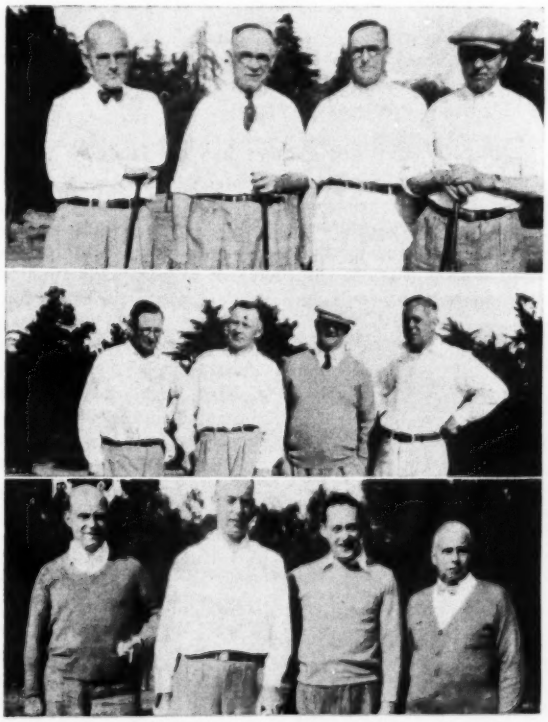
and put them through a water pressure test. Professional entertainers helped to make the "holiday surprise" a success.

The League will sponsor another welding school to start sessions during January, 1931, according to announcement of the educational committee, of which L. A. Wilson is chairman.

◆

Death of James A. McBride

James A. McBride, president of the J. A. McBride Mechanical Equipment Co., plumbing and heating contractors, of St. Louis, Mo., died at St. John's Hospital, on November 29, after undergoing an operation. Mr. McBride had done much large construction work. Among his contracts were: The Arcade building, Bell Telephone building, Park Plaza Hotel, Deaconess Hospital, Roosevelt high school, all in St. Louis, and numerous others in Louisville, Ky., West Baden, Ind., Columbus, Ohio, Tulsa, Okla., and other cities. Representatives of the Contracting Plumbers' Association and the Heating and Piping Contractors Association attended the funeral. Among the out-of-town friends who attended the funeral were Morris Casey and Thomas Hanley, Jr., of Chicago; Ed. L. Penfrase of New York City; John O'Flaherty and Edward J. Maag of East St. Louis, Ill. Mr. McBride is survived by a brother, John J. McBride of Cleveland, and three sisters, Mrs. M. J. O'Neil, Mary and Kate McBride of Toronto, Canada. Mr. McBride was a member of St. Louis Lodge No. 9, B. P. O. E.



Top row: Henry Olson, David Turner, H. Brown and William Turner. Middle row: B. F. Blair, J. J. McLeod, Don. L. O'Hair, Ross M. Clark. Bottom row: H. F. Potter, C. C. Anderson, F. F. Elliott and W. Allen Taylor. Photos taken at the Beresford meet of the San Francisco Plumbing and Heating Club

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"IT IS THE BODY ITSELF"

SIGNIFICANT!

THAT the two largest groups of hospital buildings in the world, the Columbia Presbyterian Hospital Centre, built in 1927, and the New York-Cornell Hospital Centre, under construction at the present time, should select KNIGHT-WARE Acid Proof Pipe and Fittings for their complete acid waste and ventilating systems?

In the New York-Cornell group alone, we are supplying approximately

33,000 lineal feet of KNIGHT-WARE Pipe in bores from 2″ to 24″

12,650 KNIGHT-WARE Fittings in bores from 2″ to 24″

or a total length of

8½ Miles of Pipe and Fittings

Besides, we have had the pleasure to supply a great many of our largest and best known colleges and universities with complete acid proof equipment for their Chemistry, Pharmacy, Biology and other buildings requiring such equipment.

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San Francisco, Merchants Exchange Bldg., Douglas 375 — Niagara Falls, 309 United Office Bldg., Niagara Falls 507 — Montreal, Que., 1307 Notre Dame St., W., Main 2625

Woman's Page

Many letters come in telling of the writers' interest in reading the news of other women's auxiliaries, and explaining that their own organizations like to let others know what they are doing. Secretaries who send in news of their organizations help to increase the interest not only of their own members but also of members in other towns. At the holiday season, many auxiliaries are holding social affairs, and many are actively engaged in charitable work also. News of these activities will be of interest to all the readers of this page.

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Mrs. Orriss Entertains New Jersey Board Members

A dinner party was given recently by Mrs. William T. J. Orriss, who last year was president of the New Jersey State Women's Auxiliary, to the ladies who served on her executive board. Those present at the affair, which was held at Mrs. Orriss's home in Union City, N. J., were: Mrs. John J. Corcoran of Jersey City and Mrs. J. Miller Heidweiler of Trenton, now president and vice president, respectively, of the Auxiliary; Mrs. Viola Strack of Camden, Mrs. Henry J. Williamson of Montclair, Mrs. Louis Weigele of Clifton and Mrs. H. Williams of Orange. Mrs. Charles Zimmermann of Union City, who was Mrs. Orriss's secretary, was unable to attend because of the illness of her husband. Mrs. Charles J. Samuel of Montclair, Mrs. W. J. Wilson of Lyndhurst and Mrs. Otto Miller of Rahway were also absent. After dinner a number of games were played, with honors going to Mrs. Corcoran and Mrs. Strack.

San Francisco Auxiliary Elects Officers

The San Francisco, Calif., Women's Auxiliary held its monthly meeting on Thursday, December 4, at Elizabeth Inn, 1911 Van Ness avenue. Luncheon was served, followed by a business meeting. There was an attendance of twenty. Officers were elected for the year 1931 as follows: Mrs. W. Koenig, president; Mrs. F. Balling, vice president; Mrs. Joseph Sand, secretary-treasurer, and Mrs. L. J. Ravani, marshal. Mrs. Sand has held the office of secretary for six years. After the business meeting, bridge was played, honors going to Mesdames Sand, Mayer, Morton, Bessie Koenig and La Chappelle. Ice cream and cake were served after the meeting. Mrs. Mayer and officers were hostesses. The next meeting will be held on January 8, at which time the new officers of the auxiliary will be inaugurated.

Left to right: Mrs. Frank R. Brown, Mrs. M. L. Pellicciotti and Mrs. W. G. Duff, all of Los Angeles. Photo taken at the convention of the California Merchant Plumbers' Association

Newton Auxiliary Makes Donations to Charitable Work

The regular monthly meeting of the Newton Women's Auxiliary was held on Wednesday evening, December 10, at the home of Mrs. A. G. Kerr, 21 Coyne road, Waban, Mass. The meeting was largely attended, and plans for Christmas were made. The auxiliary donated $35 for charity, $10 of which goes to the "Post" Santa Claus, and the other $25 is to be distributed to needy families. At Thanksgiving time, the sum of $10 was given for charitable work.

A large Christmas basket, which each member is helping to fill, is also being given. The Master Plumbers' Association has also contributed another $35 for charity, making a total of $70 donated by the two organizations. A committee of four women, Mrs. Davis, Mrs. Warren, Mrs. Leahy and Mrs. Jepsen, have been chosen to serve. After the meeting, bridge was played, honors going to Mrs. Landers, Mrs. Warren and Mrs. Burke. A delightful luncheon was served to the ladies and to the members of the master plumbers' association. After the luncheon, those present were entertained by Charles Stone, who showed some very fine movies, which were of great interest to all. A delightful evening was spent by all.

Detroit Auxiliary Active in Charitable Work

The Women's Auxiliary of Detroit, Mich., met on December 2, with a very good attendance. Reports were read from the welfare committee, telling how several families had been assisted with food, shoes and clothing. The report also told about the giving of a good-sized donation of money to help provide an extra rest-room for the accommodation of the workers of the "good-will' organization. The rest-room was badly needed, and was much appreciated by the workers. A sum of money was set aside to be used during the winter, as the committee sees fit, when cases are brought to its attention. A very interesting report was read by Mrs. M. Marquardt on the result of the work for the Needle-Work Guild. A very appreciative letter of thanks was also read from Mrs. Howard Smith, secretary of

the Guild. Plans were also made for social affairs to take place in the near future. Mrs. Al. Hempel was chosen chairman of a committee appointed to take charge of arrangements for a luncheon and theater party to take place the first week in the new year.

Milwaukee Auxiliary Elects Officers

Mrs. Fred Westfahl has been elected president of the Women's Auxiliary of the Milwaukee, Wis., Master Plumbers' Association to succeed Mrs. O. Waskow, at the annual meeting of that organization held Monday, December 1,

Top row: Mrs. A. J. Hanneman, Wisconsin Rapids; Mrs. William Streich, Kenosha; Mrs. John Peppard, Manitowoc; Mrs. J. C. Scheck, Sheboygan. Middle row: Mrs. F. Welsh and Mrs. Eugene Morse, both of Eau Claire; Miss A. J. Jamesson and Mrs. A. G. Jamesson of La Crosse. Bottom row: Mrs. W. H. Liegler, Racine; Mrs. R. E. Hasselkus, Dousman; Mrs. V. A. Landowski, Stevens Point. Photos taken at the convention of the Wisconsin Plumbing Inspectors' Society

in the Roanoke Room of the Hotel Randolph at Milwaukee. Other officers chosen include: Mrs. William Schoenrock, first vice president; Mrs. Walter Dusold, second vice president; Mrs. J. Hahn, third vice president; Mrs. Peter Vogt, recording secretary; Mrs. C. Blackford, corresponding secretary; Mrs. R. Wenzel, treasurer; Mrs. L. R. Schmaus, assistant treasurer, and Mrs. R. Friend, chaplain. Installation of the new officers will take place on the first Monday in January, at which time plans will get under way for the entertainment of the ladies who attend the Wisconsin Master Plumbers' Association convention, which is scheduled for January 13, 14 and 15, at the Hotel Pfister in Milwaukee.

The women have been making plans for the children's Christmas party on December 27. It will be held at Prospect Lodge, First and Wright streets, Milwaukee, Wis.

St. Louis Auxiliary's Party Is a Great Success

The Women's Auxiliary to the Contracting Plumbers of St. Louis, Mo., met on Thursday, December 11, in the Daniel Boone room of the Hotel Statler. Officers for the coming year were elected as follows: Mrs. A. W. Marx, president; Mrs. J. D. Els, vice-president; Mrs. J. Fowler, secretary; Mrs. H. Mersmen, treasurer; Mrs. L. Miller, sergeant-at-arms. A Christmas party was held at this meeting, attended by sixty ladies, including members and guests, and by sixty-five children, twenty-five of whom were from the Markham Memorial Day Nursery. Members of the St. Louis County auxiliary were guests of the St. Louis auxiliary at the party. Presents were exchanged by the members, while Santa Claus made the children happy with gifts of toys. Popcorn, apples and candy were given

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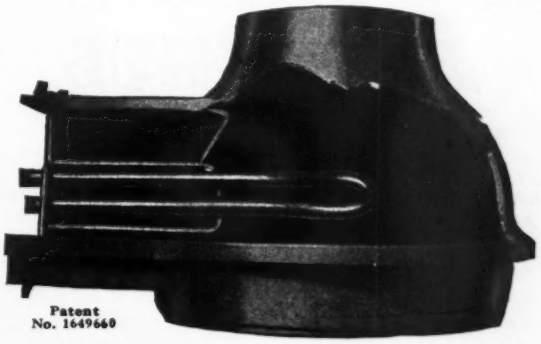
THE NO-POCKET, ONE-PIECE FURNACE COIL



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The Sizzler is the only one-piece, no-pocket coil made, providing circulation always in an upward or horizontal direction. Assures free, noiseless flow of water because it can't clog or lime up. *Write us for full information today.*

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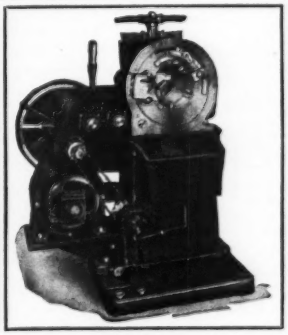
The Globe Sizzler is made in different lengths to fit all makes of furnaces. It comes to you ready for installation, each coil packed in an individual carton.



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With Merrell Pipe Threading equipment ready to handle pipe jobs quickly, accurately and economically, you can get those jobs you're losing now because your labor figures are too high.

Write today for complete information on the Merrell line. Time your work with a Merrell as compared to the old-fashioned equipment. You'll find that it will save you the difference that means the work at a profit.

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Remodeling a house that has not got a flood-free basement is investing in only partial satisfaction.

Sell your remodeling jobs right by beginning in the basement with Wade Back Water Valves for complete and permanent flood protection.

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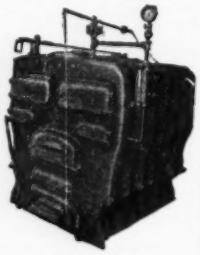
Square Sectional Steam Heater

Number 400 Series



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to all. The committee in charge of the affair was composed of Mrs. L. Miller, chairman; Mrs. E. E. Manahan, Mrs. J. Fowler, Mrs. J. D. Els, Mrs. R. Roos and Mrs. A. W. Marx. Everyone enjoyed the party and it was a great success. During Christmas week, fifty baskets of food were distributed to worthy families. Pies will be given to the inmates of the Old Folks' Home during a coffee and pie social some time in February.

Boston Auxiliary Holds Meeting

The Women's Auxiliary to the Boston Association of Master Plumbers was held at the home of Mrs. James A. Cotter in Brookline on November 19. All the officers were present. Mrs. Herbert L. Rose, president of the auxiliary, presided at the meeting. Plans for the winter activities were discussed. The meeting was well attended by members and their husbands, the social hour of the evening becoming the festivities of a "housewarming" to Mr. and Mrs. Cotter and their family in their beautiful new home.

Pasadena Auxiliary Active

The Women's Auxiliary to the Merchant Plumbers' Association of Pasadena, Calif., holds a dinner meeting on the first Tuesday of each month. On the third Friday a luncheon is held. Luncheons are held at the homes of members. The December meeting and dinner was held at the Hall, 484 South Hudson street. There were thirty-two reservations for dinner, and twelve for luncheon. The auxiliary gives numerous card parties, and a Christmas party with a tree for the children is one of the events of the year. Coffee and cake, or ice cream and cake are served, and tables are decorated with flowers in season. Luncheon will be served the third Friday in January, at the home of the president, Mrs. W. H. Swihart, 1316 North Wilson street, and election of officers will take place.

Albany Auxiliary Elects Officers

The Women's Auxiliary to the Master Plumbers' Association of Albany, New York, recently elected the following officers for the coming term: President, Mrs. Joseph Stapf; Vice president, Mrs. Andrew Ryan; Secretary, Mrs. Henry Noord; Treasurer, Mrs. William Ryan; sick committee, Mrs. William Cassidy; publicity, Mrs. Clarence S. Keeshan. The meeting was largely attended and one of the most interesting ever held. At the close of the meeting, luncheon was served.

Trenton Auxiliary Enjoys Christmas Party

The Women's Auxiliary to the Trenton, N. J., Master Plumbers' Association held its monthly meeting on Wednesday, December 3, at the home of Mrs. Miller J. Heidweiler. Attendance was one hundred per cent. The regular order of business was followed, and after the business meeting had been adjourned, a Christmas party was held. The hostess, Mrs. Heidweiler, served refreshments which were enjoyed by all present. Attractive table decorations appropriate to the Christmas season were used. The next meeting will be held at the home of Mrs. Thomas Kerwick on January 7.

Kansas City Auxiliary Gives Successful Party

The Women's Auxiliary of Kansas City, Mo., gave a party on November 29 at the beautiful home of Mrs. John C. Friel, 1232 West Fifty-First street. As the proceeds were to be devoted to bringing Christmas cheer to some needy families, members were pleased that the affair was such a financial success. The charming hospitality of Mr. and Mrs. Friel was much appreciated by all, and a most enjoyable evening was spent by the many guests present.

Plans are under way for the annual Christmas party, which is to be given on January 7, 1931, at Drexel Hall in Kansas City. This is an affair greatly anticipated by the families and friends of the auxiliary, and a huge Christmas tree, dancing and cards will enliven the evening.

District of Columbia Auxiliary Gives Card Party

The Women's Auxiliary of the District of Columbia gave a card party on November 22, at the residence of Mrs. Fred W. Quinter, president of the auxiliary, who also acted as chairman of the committee, being assisted by Mrs. Frank A. Kerr and Mrs. Fred Koehler. About forty attended. Two other parties will follow in the near future.

North Shore Auxiliary Holds Meeting

The Women's Auxiliary to the North Shore Sanitary Contractors' Association was entertained by Mrs. Vic J. Killian at her home on November 20. A most delicious luncheon was served to the fifteen members present. The business meeting was held immediately after lunch and a committee was appointed to dispense some of the funds for charity when an occasion presents itself. The committee to do this work consists of Mrs. G. Swift, Mrs. G. Moore, Mrs. A. Chester, Mrs. A. Kyle, and Mrs. N. Merganthaler. The usual game of bridge was played with Mrs. Howard Moore carrying off first honors, Mrs. McArthur, second, and Mrs. F. Flader third.

Canton Auxiliary Gives Luncheon

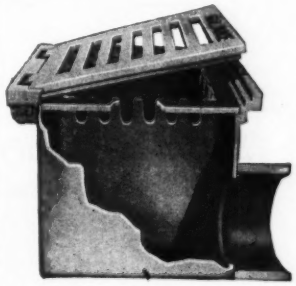
The Women's Auxiliary to the Canton, Ohio, Master Plumbers' Association was entertained with a luncheon at the Elks Club on December 2 by Mrs. Clarence Baechel and Mrs. C. Carpenter. The Christmas exchange was held at this meeting. After the business meeting, bridge was played, with honors going to Mrs. John Roth and Mrs. William Zernechel. A card party was given on December 16 at the association rooms, Mrs. Roth, Mrs. William Zernechel, Mrs. U. I. Bott and Mrs. A. Schwitzgable being hostesses. On January 6, Mrs. A. W. Baum will entertain the auxiliary at her home at 620 Clarendon avenue, N. W. She will be assisted by Mrs. R. Heiman. Members of the auxiliary are busy planning for the entertainment of visiting ladies at the convention of the state auxiliary to be held in Canton in February.

Card Party Given by Indianapolis Auxiliary

The monthly card party of the Women's Auxiliary to the Merchant Plumbers' Association of Indianapolis, Ind.,

Mrs. C. Rose and Miss Mary A. McKenna of Boston. Photos taken at the convention of the Massachusetts Women's Auxiliary

Blake Extra Heavy Floor Drain *with* Mud *or* Refuse Bucket *and* Hinged Strainer



K-44A

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Strainer can be arranged with slightly elevated V-shaped bars for school pupils to scrape shoes on. The bucket will catch the dirt.

Strainer is 12 in. square. Over all top, 13¼x14 inches. Total depth, 10 inches.

Hub outlet can be furnished for 3, 4, 5 or 6-inch soil or screwed pipe.

Weight, 85 pounds.

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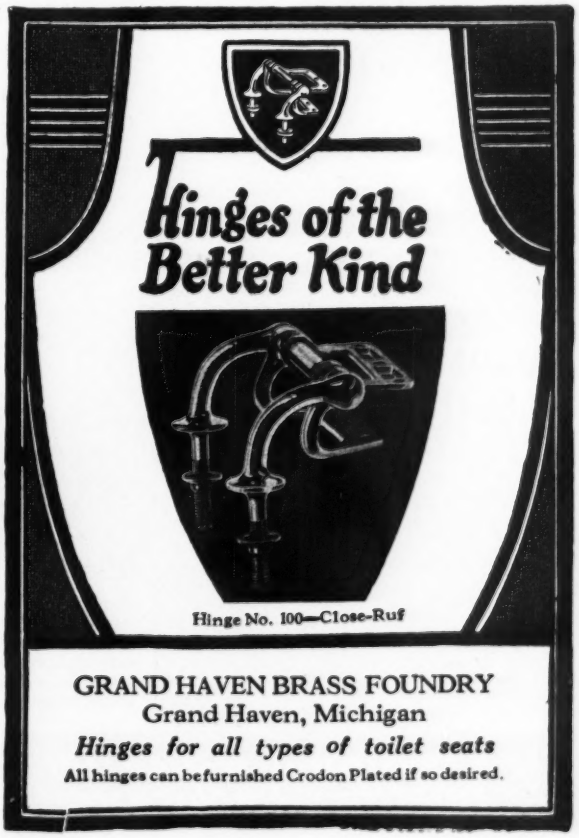

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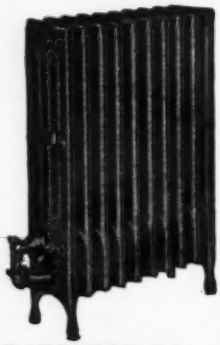

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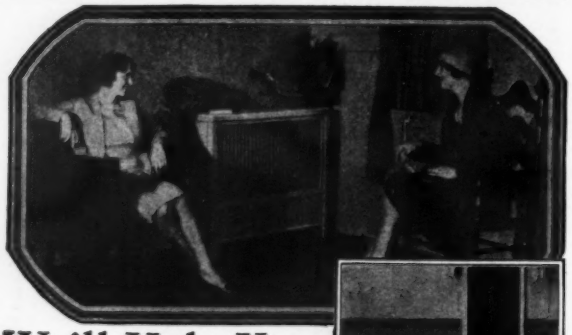

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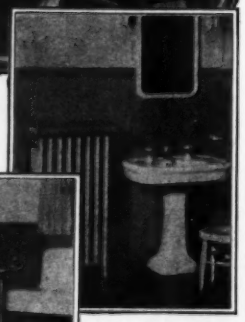

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was held at the home of Mr. and Mrs. Charles F. Trosky, 633 South New Jersey street, Indianapolis, Ind., with the following present: Mr. and Mrs. John J. Anderson, Miss Charlotte Anderson, Mrs. Lawrence Isley, Mr. and Mrs. Richard J. Bardy, Mr. and Mrs. Glenn Petty, Mr. and Mrs. Tyra Collins, Mr. and Mrs. E. C. Wiebke, Mr. and Mrs. G. T. Watson, Mr. and Mrs. F. E. Trosky. After a most enjoyable evening spent in playing cards, a luncheon consisting of sandwiches, pumpkin pie and hot coffee was served. Mr. and Mrs. Trosky were assisted in serving by Mrs. R. J. Bardy, Mrs. F. E. Trosky and Mrs. Tyra Collins.

Oklahoma City Women Meet

The Women's Auxiliary of the Master Plumbers' Association of Oklahoma City, Okla., met for a business session on December 1, in its club rooms, following which the husbands were entertained at bridge and dancing. Honors in the card game went to Mrs. Henry F. Hanson and Mr. S. G. Russell. A buffet supper was served at the close of the evening by the hostesses, Mrs. Henry F. Hanson, Mrs. K. G. Brandt and Mrs. J. M. Anderson.

Special guests were Mr. and Mrs. E. L. Estes and Mrs. R. J. Reid of Shawnee, Okla. The members were very glad to have them at the meeting, and hope to have them often. The next meeting will be on January 5, 1931, when Mrs. William R. Mahr, Mrs. J. J. Cosgrove and Mrs. Ralph C. DeLautre will be hostesses.

San Diego Auxiliary Attends Federation Meeting

The Women's Auxiliary to the San Diego, Calif., Master Plumbers' Association attended the federation meeting held recently at the U. S. Grant Hotel. There was a large turnout for the golf game held in the morning at the La Jolla Golf Club, La Jolla. In the afternoon, the men attended the meeting of secretaries and delegates held in the Italian room. At 6:30 dinner was served and at 7:30 an address of welcome was delivered by Harry C. Clark, mayor of San Diego. Mrs. Esther Rohde was hostess in the French room. At 9:15 Edward Cormack addressed the general meeting. At 10 o'clock, dancing, with special entertainment features, took place. Among those who entertained the guests were: Edna Jones, Ann Poprant, Pauline Greenwood, Mr. and Mrs. W. F. Reyer, Frances Schulze, Sheldon Brocket, Laurie Higgins, Charles Cannon, Mrs. Horace Allison, and Marion, Bernice and Elinore Rohde.

Moline-Rock Island Auxiliary Contributes to Christmas Funds

The Women's Auxiliary of the Master Plumbers' Association of Rock Island and Moline held a monthly meeting on December 8 at the Y.W.C.A. in Rock Island, Ill. Nine members attended. At the business session, $5 was donated to the Dispatch Good Fellow fund, and $5 to the Rock Island Argus Santa Claus fund. A social hour was enjoyed after refreshments had been served in the dining room. Yellow and white chrysanthemums were used as table decorations. Mrs. A. N. McNeill, 1104 I avenue, Rock Island, acted as hostess. The next meeting will be held at the Moline Y.W.C.A. on January 12, with Mrs. Charles Stange as hostess.

South Side Auxiliary to Hold Party

The monthly meeting of the South Side Women's Auxiliary to the Master Plumbers Association of Chicago, was held on Wednesday, December 3, at the Broadview Hotel. Luncheon tables were beautifully decorated in Christmas decorations and a delicious turkey luncheon was served to the members. The hostesses for the meeting were Mesdames Alcock, Bolton, Flavin and Taffe. A letter of thanks

was received from Mrs. Compton for flowers which had been sent her. She also extended the season's greetings to all the South Side Auxiliary members. Mrs. Quinlan, chairman of the entertainment committee, made a brief report regarding the party to be held on January 10 at the Medinah Athletic Club for the members and their friends. It is expected that nearly every member will be present at this party, which undoubtedly will be the most important event of the year for the auxiliary. A delightful card game was enjoyed by all. Those honored at bridge were Mesdames Calnan, Larson and Bolton, and in five hundred, Mrs. Hazard.

Salt Lake City Auxiliary Holds Monthly Meeting

Mrs. R. Sneddon, Salt Lake City, Utah, entertained eleven members of the Salt Lake City Auxiliary at her home on November 5. This was a monthly meeting, held the first Wednesday in each month. It was decided that the women make little aprons for the poor children in the neighborhood house. Mr. Rupea, secretary of the Sanitary & Heating Engineers of Salt Lake City, gave an interesting talk. The hostess served a delightful luncheon.

Wilmington Auxiliary Holds Meeting

The Women's Auxiliary to the Master Plumbers Association of Wilmington, Del., held its regular monthly meeting on November 17, Mrs. Albert Hayman acting as hostess. The finance chairman reported a sum of money netted from the sale of candy and aprons. It was planned that the women sell Christmas cards and wrapping paper. Several Christmas baskets were distributed to needy families by the auxiliary. Following refreshments, a social hour was enjoyed.

Amarillo Auxiliary Is Entertained

On November 20, Mrs. Roy Burke entertained twenty auxiliary and association members of Amarillo, Tex., at her home. Bridge and forty-two were enjoyed. Mrs. Burke served pecan pie, whipped cream and coffee amid a Thanksgiving color scheme.

Santa Monica Auxiliary Gives Turkey Dinner

Twenty-four men and women enjoyed a dinner on November 22 given by the Women's Auxiliary to the Santa Monica Bay (Calif.) Merchant Plumbers. The dinner consisted of lobster cocktail, turkey "with all its trimmings" and Christmas pudding. The table was decorated with yellow dahlias and ferns. Honors in whist went to Mrs. J. Gordon, M. D. Duron, Mrs. E. Balsley and William Hemsley. We learn from Mrs. Keller, secretary, that the auxiliary holds a dance the last Saturday of each month at the Rendezvous Ball Room.

Ben Seckinger of Atlanta, vice president; Mrs. Ben Seckinger, Miss Lois Seckinger and a friend at the convention of the Georgia Association of Master Plumbers

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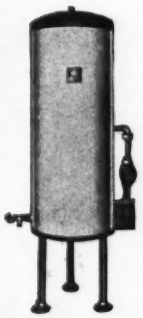

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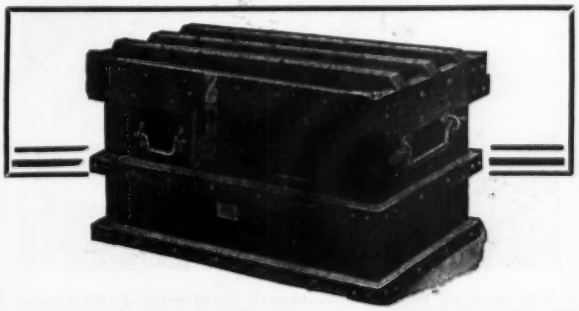

VANDERMAN CHESTS

Perfect protection for your tools. Vanderman Chests are steel, oak ribbed. Write for catalog.

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New Trade Literature

Handbook of United Cork Companies

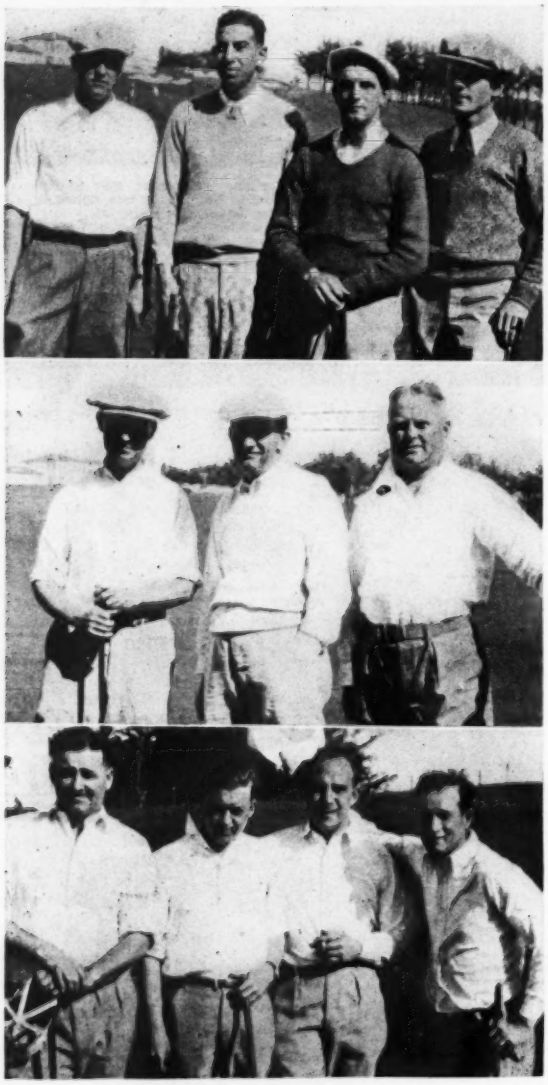
United Cork Companies, Lyndhurst, N. J., has just announced the 1931 issue of its handbook on insulation containing technical data, blue print specifications, catalog data, insulation details and methods of construction.

Circular of Sarco Co., Inc.

Sarco Co., Inc., New York City, has prepared literature presenting a new, thermostatic blast trap of its manufacture. The device is all brass and is described as having a different suspension of interior elements.

Folder of Combustion Engineering Corp.

Combustion Engineering Corp., New York City, is mailing a four-page folder announcing as an addition to its line of stokers one designed for the automatic firing of heating boilers of 3,500 to 7,500 square feet of steam radiation capacity. In addition the folder lists the salient features of its heating products and gives the principal dimensions. Illustrating the design on which the units are similarly manufactured, it also presents a sectional elevation and plan view. The corporation's district offices are listed.



Top row: F. H. Pennock, Stuart Greenberg, J. V. Young and E. Heieck. Middle row: J. D. Fleming, P. F. Scott and C. P. Hensley. Bottom row: J. W. Forsythe, G. W. Nunn, H. K. Browning and W. H. Rainwater. Photos taken at the meet of the San Francisco Plumbing and Heating Club held at the Union League Golf and Country Club

Catalog of Geo. D. Roper Corp.

Geo. D. Roper Corp., of Rockford, Ill., has just issued its Catalog 58, entitled "Rotary Pumps, Hand and Power, for All Purposes." Outfits for supplying fuel to oil burners, for circulating ice water, and for pumping water from a cistern are described. Different types of pumps are illustrated, capacities given, and their purposes explained, and the different uses of the various pumps are outlined. Reasons for trouble in installations, methods of determining power required for pumping, formulas for determining size and speed of pulleys and gears, instructions for installing pumps, etc., are also given.

Pamphlet of Oil City Boiler Works

Oil City Boiler Works, Oil City, Pa., is sending out a pamphlet describing its water tube boilers. Technical descriptions are given, and the various parts of the boiler are illustrated. Construction of the boiler is described in detail. Illustrations also show several large buildings in which the company's boilers are used.

Leaflet of Crist & Schilken Co., Inc.

Crist & Schilken Co., Inc., of Pittsburgh, Pa., is sending out a leaflet describing and illustrating its shower stall door. The leaflet describes the door panel, ventilating grille, latch, water-table, etc.

Circular of Hart & Cooley Mfg. Co.

Hart & Cooley Mfg. Co., of Chicago, is sending out a leaflet describing its automatic heat control. The thermostat and motor are described, and several illustrations are given.

Pamphlet of Monitor Boiler Co.

Monitor Boiler Co., Philadelphia, has issued a pamphlet describing its electrically welded steel heating boilers for oil and coal burning. Tables of ratings for direct draft boilers for coal, and for boilers for oil, stoker or gas, are given, and tables of oil burning and coal burning steam boilers are also included. Tables of measurements, cross section views, illustrations of boilers, etc., are given in the pamphlet.

"A Half Century of Progress"

S. R. Dresser Mfg. Co., Bradford, Pa., has issued a booklet in commemoration of its fiftieth anniversary. The booklet is entitled "A Half Century of Progress." Several pages are devoted to a history of the growth of the company during the fifty years of its existence. Other pages are devoted to pictures of company executives, members of the sales and service departments, plant officials, shop scenes, and views of installations of the company's gas and water lines.

Circular of Odin Stove Mfg. Co.

Odin Stove Mfg. Co., Erie, Pa., is sending out a circular describing its range boiler stand, carrying a thirty-gallon tank on one end, and a forty-gallon when reversed. Cast iron floor flanges, vent pipe covers, and cesspools are also described.

Bulletin of the Davis Engineering Corp.

The Davis Engineering Corp., of New York City, has issued a bulletin describing its storage water heaters.

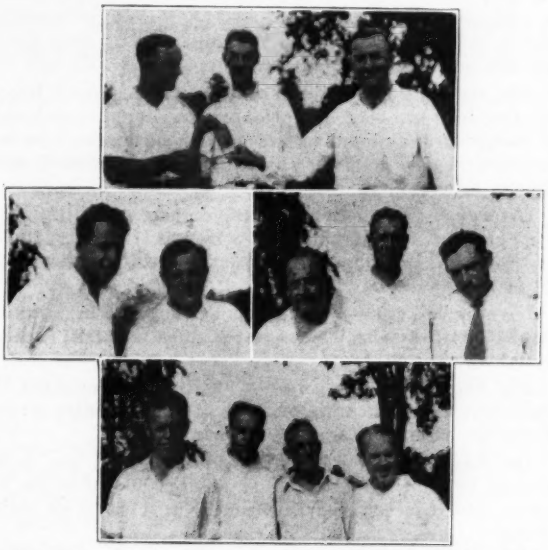
The bulletin also includes several useful tables and diagrams for determining the hot water requirements for buildings, and an illustrative problem applying the methods used in arriving at the correct size and type of storage water heaters. Among the tables given is one showing the amount of water used per fixture for various classes of buildings.

"The Protective Value of Independent Inspections"

The Pittsburgh Testing Laboratory, Pittsburgh, Pa., has issued a booklet with the title, "The Protective Value of Independent Inspections." The necessary operations in inspecting steel in the mill and shop, inspecting steel erection and welding, cement testing in the mill and field, etc., are described.

Circular of Powers Regulator Co.

Powers Regulator Co., of Chicago and New York City, is sending out a circular describing its tank regulators, mixing valves, self-operating regulators, compressed air operated regulators, etc. Among these are regulators for unit heater control, for the control of liquid temperatures,



Top row: L. Daub, B. Pennypacker, K. S. Jacobsen. Middle row: M. F. Blankin, G. W. A. Kappell, H. W. Rickabaugh, T. W. Cooper, J. H. Hemphill, Jr. Bottom row: J. Murdock, Wm. P. Culbert, captain, W. R. Eichberg, A. McClintock, Jr. Photos taken at recent tournament of Heating and Ventilating Golf Association of Philadelphia

for atmospheric temperatures and for diaphragm valves and dampers. Numerous diagrams show installations of the various regulators.

"An Important Contribution to Metallurgy"

A. M. Byers Co., of Pittsburgh, Pa., has just issued a booklet with the title, "An Important Contribution to Metallurgy." The booklet describes the company's new method of manufacturing wrought iron under the Aston patents. The development of the new process and the various operations are described in detail. By the new process a ball of 6,000 pounds, as contrasted with the 200-pound ball produced by the hand puddler, is formed. Photographs show the various steps in the process.

Folder of Mueller Brass Co.

Mueller Brass Co., Port Huron, Mich., is distributing a circular describing its copper tube and fittings. An illustration shows the method of making a connection with the company's fitting to its copper tube by soldering, using the company's special solder, the blow torch, and the application of the natural law of capillary attraction.

New York's Largest Hotel Selects

Patterson Hot Water Heaters

Ten Patterson Hot Water Service Heaters furnish the hot water for this 43-story hotel. It has 2,500 guest rooms and it is estimated that 30,000 people a day will use this building.

Three of these Patterson Heaters each have a capacity for heating 6,000 gals. per hour and the others are of 12,000 gal. per hour capacity.

Two of the heaters furnish hot water to the laundries; two to the kitchens and pantries; one is used for service in the lower floors and cellars and the balance supply the upper floors. All the heaters are cross-connected for emergency. Only nine are to be used at all times and one is for a spare unit.

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"Vulcan Superior"
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LOOK at the close-up view in the above illustration. Note the "V" recess in the jaws of Williams' "Vulcan Superior" Tongs. This design assures quick and positive grip on fittings. No change in the tool is necessary when you switch from straight pipe to fittings.

And "Vulcan Superior" is the ONLY Chain Tongs with *reversible* pipe-and-fittings jaws. Williams' Tongs give double service at no added cost. 7 sizes for pipe and fittings, ⅛ to 12".

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PIPE AND FITTINGS TONGS

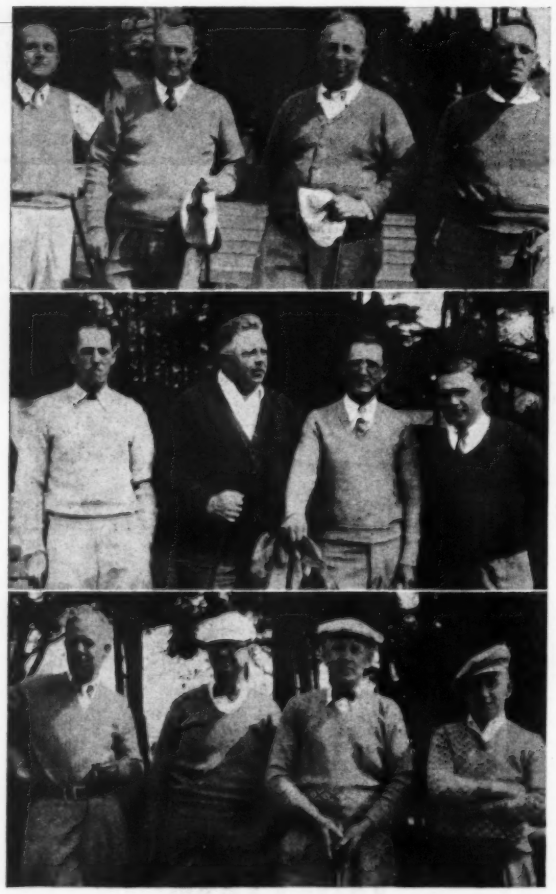
Business Changes and Ventures

New Ventures

Buffalo, N. Y.—The Foose Olsen Heating Company has been established here as a general heating engineering and contracting business, under the management of Frank L. Olsen, 327 Maple street, and William F. Foose, 29 Grand View avenue.

Jamestown, N. Y.—The firm of Chatfield and Sharp, Inc., has been organized and incorporated, with a capital of 10,000 shares of no par common stock, to establish and operate a plumbing and heating engineering and contracting business. The new concern will take over and continue the operation of the business at 304 Pine street, formerly conducted as a partnership under the same name. The new firm is represented by John S. Leonard, 200 North Main street.

Port Washington, N. Y.—The Port Washington Plumbing Company, Inc., has been chartered, with a capital of $10,000, to establish and operate a plumbing engineering and contracting business. The new concern is represented by D. S. Wolfson, 1440 Broadway, New York City.



Tow row: W. H. Kirkland, Don O'Hair, M. Greenberg, Howard Finch. Middle row: B. G. Harris, Frank Mosher, H. Porter Wilson and Robert Allmon. Bottom row: Ross M. Clark, B. F. Blair, J. J. McLeod, J. S. Mulloch. Photos taken at the meet of the Plumbing and Heating Club of San Francisco at the Presidio Golf Club

Seabright, N. J.—The Seabright-Rumson Plumbing and Heating Company has been organized and incorporated, with a capital of $25,000, to establish and operate a plumbing and heating contracting and engineering business. The new concern is represented by L. S. Throckmorton, Long Branch, N. J.

Great Neck, N. Y.—The Great Neck Plumbing and Heating Corporation has been organized and incorporated, with a capital of $10,000, to establish and operate a plumbing and heating engineering and contracting business. The new concern is represented by M. P. O'Leary, Manhasset, N. Y.

Kenosha, Wis.—Incorporation papers have been filed with the Wisconsin Secretary of State for the Ace Plumbing and Heating Co., listing capitalization at 100 shares at $100 each. Incorporators are O. E. Steven, F. Watkin, and M. Willsey. The firm will conduct a plumbing, heating and gasfitting business.

New Haven, Conn.—The Washington Plumbing & Heating Co., Inc., has been chartered with a capital of $10,000 to engage in the plumbing and heating business. The incorporators are: Samuel Kaplan, Rebecca Kabakoff and Hyman Kabakoff.

Los Angeles, Cal.—The Pacific Plumbing & Heating Co., Ltd., has been incorporated with a capital stock of $25,000 by Charles A. Cretsinger, W. E. Maxey and F. W. Redfield, all of Los Angeles.

Los Angeles, Cal.—Gus Phillips has engaged in business at 3236 Northeastern avenue under the style of El Sereno Plumbing Shop.

Los Angeles, Cal.—George W. Kirman has engaged in the plumbing and heating business at 756 Merchant street under the style of George W. Kirman Co.

Los Angeles, Cal.—The Atlas Plumbing Co. has been formed by A. N. Godson, J. P. Montez and William A. Smith, and has engaged in business at 1116 West 98th street.

Los Angeles, Cal.—The Advantage Plumbers have engaged in the plumbing and heating business at 965 Venice boulevard under the management of Jesse Eugene Scruggs.

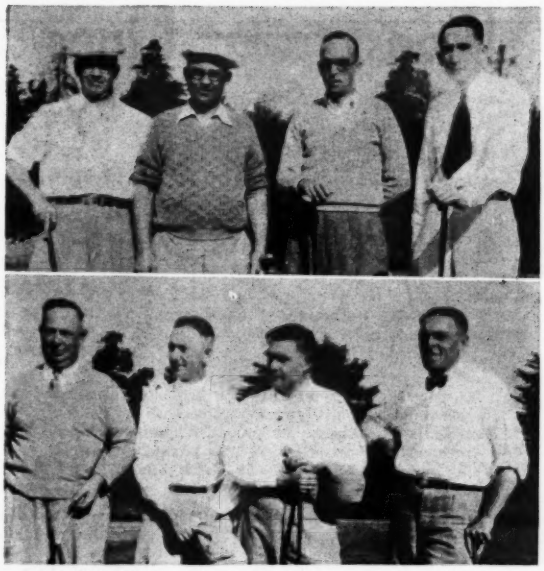
Venice, Cal.—David Shestack, 3765 Monroe street, and T. R. Hall, 10337 Venice boulevard, have formed the California Plumbing Co., located at 316 Pershing drive, Playa Del Rey.

Cleveland, Ohio—The City Plumbing and Heating Company has been organized and incorporated, with a capital of $12,000, by I. Bresin, Leonard S. Danasceau and associates, to establish and operate a plumbing and heating engineering and contracting business. The new concern is represented by Saul S. Danaceau, 722 Leader-News Building.

New York City—Joseph Engelman and associates, have organized and incorporated the firm of Joseph Engelman, Inc., with a capital of $10,000. It is planned to establish and operate a plumbing engineering and contracting business. The new concern is represented by W. Lambert, 60 East Forty-second Street.

Buffalo, N. Y.—The Household Heat Control and Contracting Company has been established here under the management of John L. Allen, 127 Hamlin Road.

Silver City, N. M.—D. B. Robertson, Inc., has been incorporated by A. L. Robertson, D. B. Robertson and David Robertson to conduct a plumbing business.



Top row: Charles Higgins, Edward Kraus, Robert Lees, Edward Phelan. Bottom row: M. Greenberg, W. A. Rowe, Robert Allmon, H. W. Finch. Photos taken at the tournament of the San Francisco Plumbing and Heating Club, at Beresford

Milwaukee, Wis.—A to Z Plumbing & Heating, Inc., has been incorporated to conduct a plumbing and heating business. Walter Klinkert, Elsabeth Klinkert and Clarence Human are the incorporators.

Business Changes

Knoxville, Tenn.—The White Plumbing and Heating Co. has returned to its former location at 412 Union avenue.

Dover, Ohio.—Harry M. Everhart, partner in the Richard & Everhart Plumbing & Heating Co., has retired from the business, which will be conducted by Rudolph Richard, remaining partner.

Riverhead, N. Y.—William H. Sweezy Heating Co. has accepted plans for an addition to its plant and showrooms at 425 West Main street. The addition will practically double the capacity of the building.

Eureka Springs, Ark.—Jasper Plumbing Co. has moved to rooms in the Commodore Theater building, formerly occupied by Railway Cafe.

Bentonville, Ark.—The Tanner Plumbing & Electric Co. has been sold to Milton Brown.

Genoa, Ill.—H. W. Slover has moved from Algonquin to Genoa, and has opened a plumbing and heating shop in the Slater building next to the Ford garage.

Covina, Calif.—Walter A. Johnson, plumbing contractor of Azusa, Calif., has purchased the plumbing and sheet metal business of E. L. Jackson, pioneer plumber of Covina, who is retiring from business, after having conducted his business in the San Gabriel valley for nearly twenty-five years. The shop is located on Citrus avenue. Mr. Johnson will operate it in addition to the business in Azusa. Graydon A. Hoke will be office manager of the Covina establishment.

Cincinnati, Ohio—Walterman Brothers, Inc., plumbing contractors, have been incorporated with a capital of $25,000, to take the place of the partnership bearing that name. Bernard Walterman, K. M. McKelvey and D. T. Hackett are the incorporators.

Sell Showers
Scores of busy business executives in your community haven't time to fill a bath tub for their morning bath. Cash in on their early morning hustle minutes. Give them this opportunity to hop into a WEISTEEL Shower Cabinet and out again all pepped up for the busy day ahead.
Set WEISTEEL Showers on any floor, against any kind of wall and connect them up. One piece construction prevents leaks. And their low cost makes them easy to sell to individuals, homes, hotels, clubs in your community.
A postal card will bring the facts . . . The HENRY WEIS MFG. CO., INC., Elkhart, Indiana.
WEISTEEL
INTEGRAL SHOWER CABINETS
Patented April 15, 1919

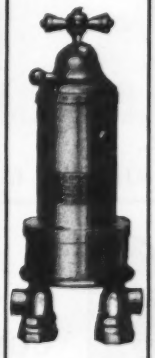
LEONARD

Water Mixing Valves

The Leonard Water Mixing Valve is all-purpose equipment. There is not an ordinary mixing job that it cannot handle efficiently and economically.

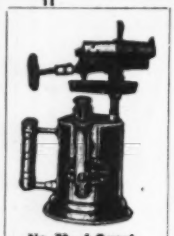
And don't forget! The Leonard is fully AUTOMATIC. Once adjusted it will deliver water at the proper temperature unfailingly. A real valve for good jobs.

Write for complete details.



Manufactured by
LEONARD-ROOKE CO.
Incorporated 1913
Elmwood Station, Providence, R. I.

The ALWAYS RELIABLE Line
Insures Efficient Service



No. 79—1 Quart
No. 80—1 Pint
Gasoline - Kerosene
Covered by Patents

There is no doubt in the minds of experienced plumbers that "ALWAYS RELIABLE" torches and furnaces are reliable, economical and render efficient service. Every plumber knows that the quality of work he turns out depends entirely upon the tools he uses.

The thorough dependability of "ALWAYS RELIABLE" torches and furnaces and their ability to do fast, economical and excellent work, is the main reason why they have been adopted as a standard part of plumbers' equipment.

Order through your distributor, who will give you prompt service and satisfactory prices.

Also specify for "ALWAYS RELIABLE" plumber's tools.

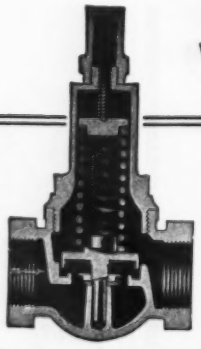
OTTO BERNZ CO., INC., Newark, New Jersey

No more swelling, elongating or distorting of any kind when you install the pure gum rubber **DUR-A-BAL***. Put them on the job now and be through with service calls and complaints.

*Reg. U. S. Pat. Off.

LAVELLE RUBBER COMPANY
320 W. Illinois St. Chicago, Ill.

KIELEY "SIMPLEX"
Water Pressure Regulating and Relief Valve



In high buildings where pressure must be maintained equally, this valve will be found almost indispensable. It is also used to good advantage on hot water storage tanks and pumps as a water pressure relief valve.

Our complete catalog is chock full of important and simple information regarding this Valve and Water Feeders. We advise you to write for it before ordering

KIELEY & MUELLER, INC. :: 34-38 West 13th Street New York, N. Y.

GERSTEIN AND COOPER
COPPER RANGE BOILERS

Only by experience do men learn the things that are good for them. Contractors everywhere have learned from experience that Gerstein & Cooper Copper Range Boilers are satisfactory in every fine detail; they're reasonably priced and easily installed.

Write for construction details

GERSTEIN & COOPER CO.
1 W. Third Street, So. Boston, Mass.
New York Office: 166 W. 72nd St., N. Y. C.

Pipe —— Lines
Connected by LyT

THERE WAS SOMETHING WRONG SOMEWHERE

"Give me Main 4321—Hello; this the wife?"

"Yes."

"Listen, dear. Will it be all right if I bring a couple of fellows home for dinner tonight?"

"Why, certainly."

"What?"

"Certainly it will. I'd be glad to have them."

"Pardon me, lady. Wrong number."

TYPING TIPS.

Hardware Age reports that a schoolgirl's essay in Montana ran as follows: "When we go camping, we must keep the place neat, we must be very careful to put out our fire. This is God's country. Don't burn it up and make it look like hell."

Brown fell a victim to the crossword puzzle craze. He neglected his meals, his business, his family, for the insidious squares. His principal diet became the end of a pencil and his hair was torn out in handsful during the search for chemical compounds in four letters and antipodean mammals in five. In his sleep he raved about "Part of a railway engine," and "Native of an eastern country."

One evening he came home and discovered a note from his wife on the dining-room table:

Dear Clarence: Since your life is centered in the solution of crossword puzzles, here is one that I have made up for you:

1—A pronoun of one letter.
2—To possess, with four letters.
3—Verb with four letters.
4—Place where people live.
5—Preposition.
6—Female relative.
7—Girl's name.

Eagerly he concentrated all his wits on deciphering this intriguing puzzle, and at last he solved it as follows:

I have gone home to Mother—Mary.

JUDGE.

THE MATRIMONIAL REPORT

A man and his wife were hotly discussing the merits of a book. Finally the wife, herself an author, said to her husband: "No, John, you can't appreciate it. You never wrote a book yourself."

"No," retorted John, "and I never laid an egg, but I'm a better judge of an omelet than any hen in the state."

Prodigal: "Father, I've a notion to settle down and go in for raising chickens."

Father: "Better try owls. Their hours would suit you better."

LEIGHTON'S GLOOM CHASER.

MAYBE MABEL'S MAN MISUNDERSTOOD

Mother: "Mabel's young man has taken offense at something. Have you said anything to him?"

Father: "Not a word. I haven't seen him since I mailed him the last electric light bill."

P. G. N., Chicago.

Men, says the conductor of a column known as "Laughing Gas," may have their failings, but they don't kiss when they meet on the street.

The editor of "Whispering Flames" a bit back said: "We read in a newspaper of a wedding. It said the bride could swim, ride, drive, play golf, tennis, ski, skate and dance." And, he adds: "We just bet that the happy couple left the church under an archway of can openers."

As usual, something important was left out of the report of the wedding. Did the bridegroom have any accomplishments—beyond his ability to pay the bills for the bride's swimming, riding, driving, golfing, etc.?

L Y T.

Bath a Day Movement

Two main uses for "The Story of the Bath" now recommend themselves to those plumbing contractors who are alert enough to see the possibilities for favorable publicity in the use of the booklet as a part of a local "Bath a Day Campaign." The first is indicated by the figures at the left—which mean that in 177 cities and towns in the United States this booklet has been used as supplementary reading in the schools. And in those cities, you may be sure that the master plumber has a new standing in the community.

177

The other use is this: When "Plumber's Day" comes around in the local Kiwanis, Rotary, Lions, or other such civic service club, the booklet is distributed to those in attendance and contractors are making use of a twenty-minute program which we have worked up for that purpose.

This gives the plumbing contractor an opportunity to present his service in an interesting way at the meeting, and to give those attending something which they may take away with them and which will be sure to impress further on their minds the importance of the master plumber's service to his community.

If you have not read "The Story of the Bath" and want details concerning the use of the booklet for either of the two purposes outlined above, write "Domestic Engineering," 1900 Prairie Ave., Chicago, Ill., for a complimentary copy, and full details.

Little Sentences That Sell

Write one of these BLACK BOARD EPIGRAMS on your window or bulletin board each day. Many master plumbers and heating contractors find them real business getters.

Stuffing a turkey is culinary taxidermy.

* * *

Lantern-jawed men are not always light-headed.

* * *

A good fighter dodges lots of quarrels.

* * *

The man who boasts of being a cynic is not very dangerous.

* * *

The man who poses as a model citizen has a hard job.

* * *

Among the other trusts we have mistrusts and distrusts.

* * *

When ignorance wins, intelligence drops away below par.

* * *

Success is sometimes the result of beating the other fellow to it.

* * *

It's easy to be a hero—on the stage.

* * *

The small boy's stomach is usually in apple-pie order.

* * *

A train of thoughts runs regardless of time-tables.

* * *

A good cook should be given a wide range.

* * *

Many a rich man is unable to offer anything but an excuse.

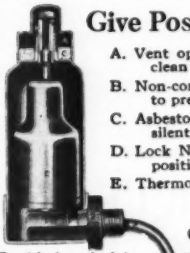
ALL THE BEST

When you install an Improved "Wilhelmi" Copper Boiler you are giving your customer not only all the best of a moderate price but the maximum of quality and assured service in the years to come. "Wilhelmi" Boilers give you something BETTER to sell.

Write for details

HAYES MANUFACTURING COMPANY, Makers
Paterson - - New Jersey

KEENEY
Air Valves
Give Positive Performance



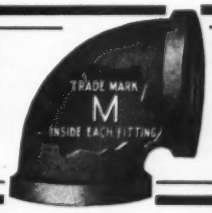
A. Vent opening enclosed by cap insures clean Valve.
B. Non-corrosive pin has bullet-shaped point to prevent sticking.
C. Asbestos muffler helps make Valve more silent.
D. Lock Nut always holds Valve in upright position.
E. Thermostatic Float.
F. Threaded hexagonal shank makes solid rest for Float.
G. Syphon Pipe placed low drains all the water.

Furnished packed in attractive counter and window display cartons

THE KEENEY MFG. CO.
Newington, Conn.

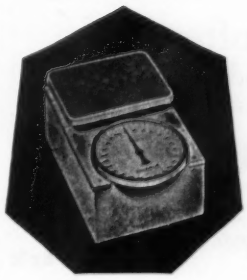
ACHESON BRASS FITTINGS

Ask for your brass fittings by name. Be sure you get the best by asking for Acheson. Trade mark INSIDE. Look for it.



ACHESON MFG. COMPANY
RANKIN, PENNA.

Sell This



A bathroom or health scale that can be sold for $12.00. Larger model for $15.50. Attractive with appealing lines, colors. Six-spring mechanism, 250-lbs. Guaranteed for life. This scale cannot tip. Write for prices.

HANSON SCALE COMPANY
546 North Ada Street, CHICAGO

GENUINE NASON STEAM TRAPS
UPKEEP
KEEP DOWN
NASON
NASON MANUFACTURING CO.
71-FULTON ST. NEW YORK N.Y.
Steam Specialty Specialists Since 1841

HAYDENVILLE
Quality in Brass and Iron Goods can be had only in Haydenville Products.
THE HAYDENVILLE CO.
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Get a Sample Can

Yager's Soldering Salts

In lead work of any kind, Yager's Soldering Salts will make the work easier. Write today for a sample can and try it. Address Dept. "D".

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Hudson, N. Y.
For list of distributors see McRae Blue Book for 1930

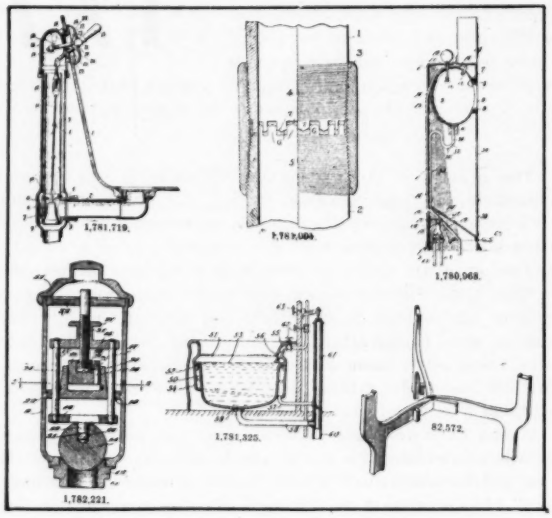
Sales Agency for Canada:
Canadian General Electric Co.,
Toronto and Montreal

Water Softener
specifications are best met by using
Zeolite Upflow Softeners
The economical and efficient method of producing soft water.
PARAMOUNT WATER SOFTENER CORPORATION
91 West St. New York

PATENTS

Plumbing Department

82,572. Boiler Stand. John K. Luton, Cleveland, Ohio, assignor to The Consolidated Iron-Steel Manufacturing Company, Cleveland, Ohio, a Corporation of Ohio.



1,780,968. Lavatory. Lawrence W. Brophy, Muskogee, Okla.

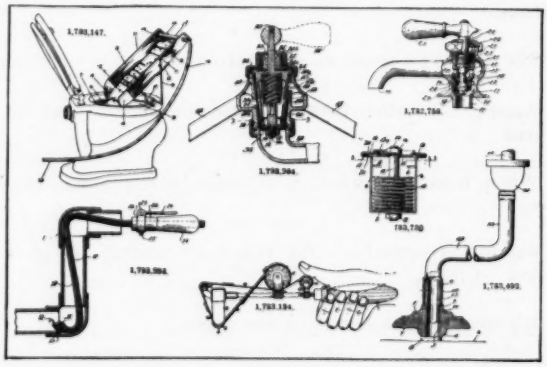
1,781,091. Pipe Joint. John M. Wilson, Pittsburgh, Pa., assignor to The National Supply Company, Toledo, Ohio, a Corporation of Ohio.

1,781,325. Bathtub. Robert W. Dowling, New York, N. Y.

1,781,719. Waste-Pipe Fitting. William Henry Darling, London, Ontario, Canada.

1,782,221. Flush Valve. Harold Wesson, Springfield, Mass., assignor to Smith and Wesson, Inc., Springfield, Mass., a Corporation of Massachusetts.

1,783,730. Thermostatic Valve. Edgar J. Leach, Janesville, Wis., assignor to Time-O-Stat Controls Company, Elkhart, Ind., a corporation of Maryland.



1,783,134. Continuous Soldering. Max Orenstein, Berlin, Germany.

1,783,147. Laundry Apparatus. Neal G. Barnard, Minneapolis, Minn.

1,782,758. Faucet Screen. John H. Gavin, Chicago, Ill., assignor to The Chicago Faucet Company, Chicago, Ill., a corporation of Illinois.

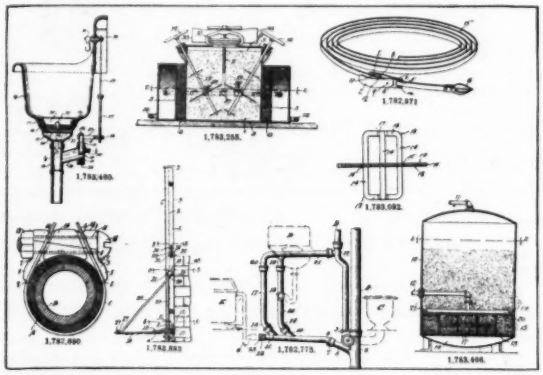
1,783,492. Bath Fixture. George Paul Boehm, Chicago, Ill.

1,783,256. Apparatus for Cleaning Out Drain Pipes. John C. Miller, Chicago, Ill.

1,783,264. Mixing Valve. Louis Sirotek, Chicago, Ill.

1,782,775. Waste and Vent Fitting. Joseph J. Crotty, New York, N. Y., assignor to The Central Foundry Company, New York, N. Y., a corporation of Maine.

1,783,255. Water Softener. Frank W. Miller, Chicago, Ill., assignor of one-half to Ira J. Wilson, Winnetka, Ill.



1,783,883. Plumbing Device. Lewis K. Larrison, Wharton, N. J.

1,782,680. Hose or Pipe Clamp. Alpheus Fay and John L. Zehnder, Louisville, Ky.

1,782,871. Handle for Pipe Cleaners. Charles Fischer, New York, N. Y.

1,783,082. Drain Protector. George B. Grosjean, Shreveport, La.

1,783,460. Pop-Up Waste. Frank G. Brotz, Kohler, Wis., assignor to Kohler Company, Kohler, Wis., a corporation of Wisconsin.

1,783,466. Construction of Zeolite Water Softeners. Robert O. Friend, Chicago, Ill.

1,783,925. Soldering Flux. Harry C. Mougey, Detroit, Mich., assignor to General Motors Research Corporation, Detroit, Mich., a corporation of Delaware. A soldering flux comprising zinc chloride, water and a water-soluble oil solvent of the group consisting of di-, tri- and tetra-ethylene glycol, ethyl and butyl carbitol, the mono-acetates of ethylene, and di-ethylene glycol and of the methyl and ethyl ethers of ethylene glycol, ethyl lactate, ethyl oxybutyrate and di-acetone alcohol.

Heating Department

1,782,461. Welding Machine. Verni J. Chapman, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York.

1,782,472. Die Head. Victor R. Koontz, Waynesboro, Pa., assignor to Landis Machine Company, Waynesboro, Pa., a corporation.

1,782,628. Refrigerating Apparatus. Olaf C. Olsen, Dayton, Ohio, assignor of two-thirds to The Borden Company, Warren, Ohio, a corporation of Ohio.

1,783,381. Boiler Return and Vacuum Trap. Stanley C. Knefel, St. Louis, Mo.

1,782,730. Oil Burner. Albert A. Lapointe, West Hartford, Conn., assignor to The Silent Glow Oil Burner Corporation, Hartford, Conn., a corporation of Connecticut.

1,783,567. Oil-Burner Construction. Harry Wilbur Gaston, New Rochelle, N. Y., assignor to Boyce Automatic Oil Burner Corporation, New York, N. Y., a corporation of New York.

1,779,759. Radiator Shield. Richard H. Ward, Queens

Prevent Condensation

with

Ozite

Pipe Covering

Proved highly efficient by U. S. Bureau of Standards figures, Ozite Pipe Covering, of Standard Hair Felt provides lifetime protection for cold water lines, and means freedom from "sweating" or condensation. Made of genuine, sterilized cattle hair. Write today for sample. No obligation.

AMERICAN HAIR & FELT CO.

18th Floor—Merchandise Mart, Chicago

STEEL PIPE of course

"Tested strength in every length"

CENTRAL TUBE CO.

GENERAL OFFICES

FIRST NATIONAL BANK BLDG.

PITTSBURGH

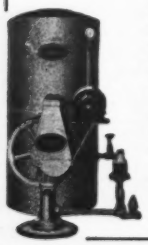
"AMERICAN SEAL"

PIPE JOINT CEMENT
Dry or Plastic « Gray or Graphite

No more leaky installations! "American Seal" Pipe Joint Cement eliminates the possibilities of leaks. It is easy to use and will assure against leakage for all time. It will not dry out and what is more, it is unaffected by heat or cold. Be on the safe side all the time—use "AMERICAN SEAL" on every job.

William Connors Paint Mfg. Co.
TROY N. Y.

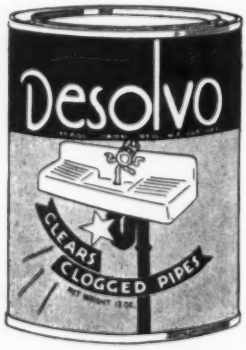
BUILD PROFITS and PRESTIGE
with the HOOSIER



The Hoosier Deep Well Pump is built to deliver continuous, trouble-free service. It is positively lubricated, and equipped with Timken Bearings and an exclusive working head which CAN'T cause stuffing box trouble. It is protected from rust, inside and out, by pure zinc, applied by the famous GalVAZink Process. You can sell the Hoosier with confidence that it will make friends on every installation.

Let us send complete information about the exclusive Flint & Walling Sales Franchise and the famous line of water service equipment, which also includes the Hoosier Shallow Well Pressure System, Hoosier and Fast Mail hand pumps and Star Windmills. Write us TODAY.

FLINT & WALLING MFG. CO.
76 Oak St. :: Kendallville, Ind.



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HOT or COLD
HARD or SOFT

Desolvo cleans them all. Whether the line is plugged with slime or hard pack grease—Whether you use hot water or cold —DESOLVO will go THROUGH. Never damages — always cleans.

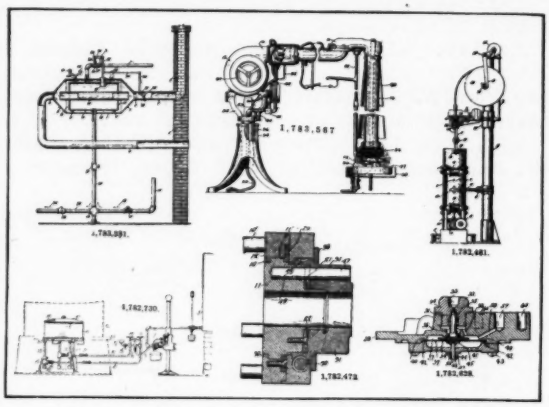
THE CHAMBERLAIN CO.
Pittsburgh, Pa.

You wouldn't think of missing your daily paper « « «

yet it does not begin to help you as your business paper does . . . so why not spend a minute to send in your subscription. You will soon realize the tremendous help you have been doing without.

DOMESTIC ENGINEERING
1900 PRAIRIE AVENUE « « CHICAGO

Village, N. Y., assignor to Edward C. Bowers and Charles L. Feldman, receivers for Wickwire Spencer Steel Com-



pany, New York, N. Y., a Corporation of Massachusetts.

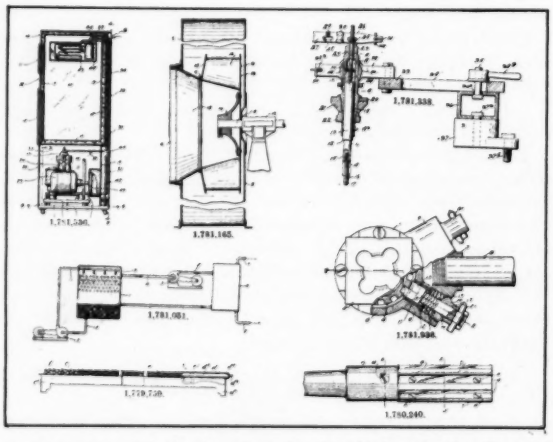
1,780,240. Reamer. Williard M. McBride, Pittsburgh, Pa.

1,781,051. Refrigeration. Willis H. Carrier, Essex Falls, N. J., assignor to Carrier Engineering Corporation, Newark, N. J.

1,781,165. Centrifugal Fan. Albert A. Criqui, Buffalo, N. Y., assignor to Buffalo Forge Company, Buffalo, N. Y., a Corporation of New York.

1,781,338. Valve-Reaming Tool. George E. Moen, Kelso, Wash.

1,781,536. Refrigeration. John Jacob Brown, New York, N. Y., assignor, by mesne assignments, to Servel, Inc., New York, N. Y.



1,781,936. Diestock. Leo V. Stoeltzlen, Erie, Pa., assignor to Reed Manufacturing Company, Erie, Pa., a Corporation of Pennsylvania.

1,783,013. Rod for Use in Arc Welding or Cutting. J. Birchard Green, Chicago, Ill., assignor to Franklin M. Warden, Chicago, Ill. In a coating for filler material as used in fusion welding and cutting, a tungsten oxide compound and a uranium oxide compound.

1,785,134. Soldering. Howard S. McQuaid, East Chicago, Ind., assignor to The Grasselli Chemical Company, Cleveland, Ohio, a Corporation of Delaware. A soldering flux comprising an ethanol-amine.

◆

Brooklyn, N. Y.—With a capital of $10,000, the American Home Heating Company has been organized and incorporated, to establish and operate a heating engineering and contracting business. The new concern is represented by Samuel Kislak, 51 Chambers Street, New York City.

"Domestic Engineering" Quarterly Index

Vol. CXXXIII—October 4 to December 27, 1930

This is the eighty-fourth index of "Domestic Engineering," an index for each quarter appearing at the end of that quarter. We ask our readers to note the value of this index for reference, calling special attention to the separate classifications of the departments of "Retail Advertising Service," and "Merchandising Articles," both of which contain many valuable ideas along the line of trade extension.

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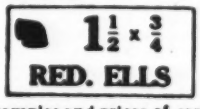

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Our price list should be in your file. Shall we send one?

When You Meet Acid Waste Corrosion

- - - - the way to serve your customer best is to RECOMMEND DURIRON. Incidentally it is also good business for you, too. DURIRON is just as easy to install as ex. hvy. C. I. soil pipe, and it will stand up indefinitely in acid service. You should be selling more of it.

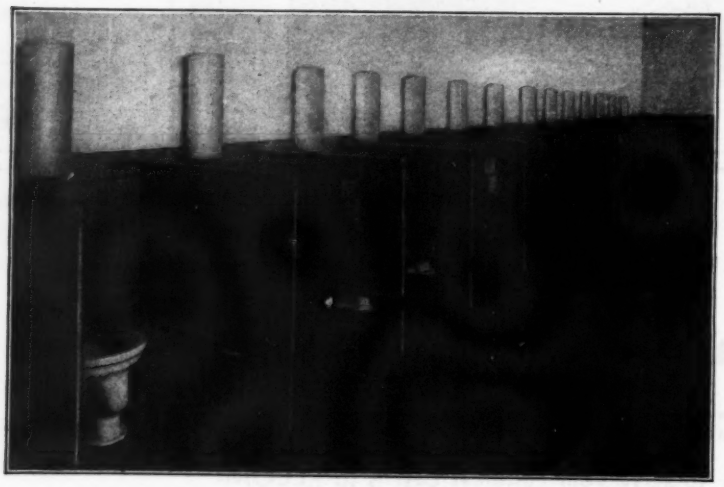
THE DURIRON COMPANY, INC.
410 N. Findlay Street Dayton, Ohio

DURIRON ACID PROOF DRAIN-PIPE

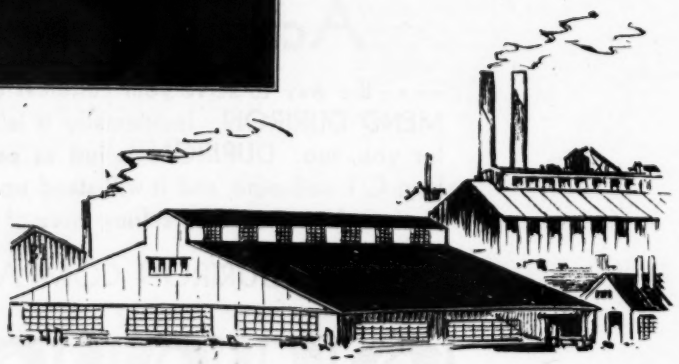
D-109

BIG PROFITS GO WITH THESE INSTALLATIONS OF VOGEL NUMBER TEN AND TEN-A CLOSETS

BECAUSE of their economy in the use of water, and the years of service they give, VOGEL Number Ten and Ten-A Closets are being installed in more and more plants and factories every day.



Showing typical installation of Vogel Number Ten Closets



STILL on an endurance test, the Number Ten has flushed 240,000 times without repairs.

See inside front page for VOGEL Frost-Proof advertisement

These are the jobs you want because of the big profits—sometimes 20 outfits at a time.

We are helping make more jobs like this for you. Our advertising, during 1931, will reach thousands of plants and factories never before approached, and this means bigger and more profitable jobs for you. Folders, blotters, and stickers are yours if you request them.

JOSEPH A. VOGEL COMPANY
Wilmington, Del. *St. Louis, Mo.*

• • • VOGEL *Products* • • •

Jenkins Flat Bead Brass Fittings delivered to you, are as perfect as is possible to make fittings.

They have been tested individually and when they have once been marked O. K. by our inspectors, there is nothing for you to worry about.

Use Jenkins Brass Fittings. They will soon prove their worth to you.

Jenkins Mfg. Company
BLOOMFIELD NEW JERSEY

JENKINS
BRASS FITTINGS

Business is always good

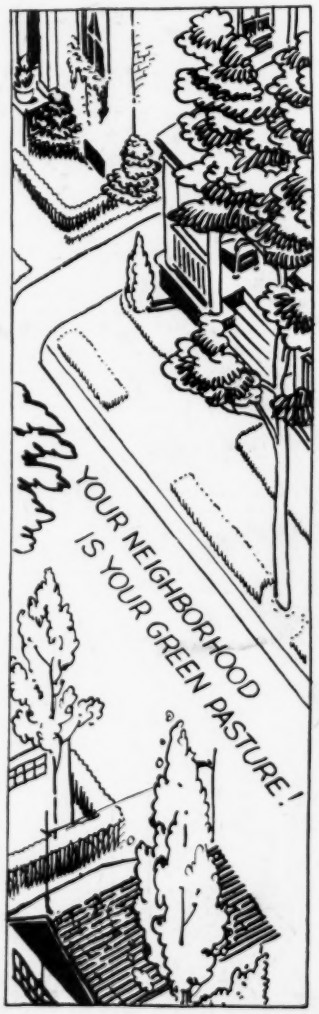
The "hustler" will tell you!

THE "live" steamfitters aren't complaining about business because instead of chanting "there isn't any business," they are out hustling for it,— in their own neighborhood which is the real green pasture, the one full of real profitable business.

Practically every building has some kind of a heating unit needing inspection. High and low pressure boilers, hot water systems and ***heating plants fired by oil burners*** can be ***insured against interrupted service*** by leakproofing with "X" Boiler Liquid before the heat is turned on.

Inspection work leads to service orders, accessory and equipment sales. Remember, that the home owner will appreciate your inspection service and that it will lead to additional profits thru good will. Don't forget apartment houses, hotels, institutions,— all appreciate being told that "X" Boiler Liquid will make a permanent repair as well as leakproof the entire system.

Use the telephone, personal calls and reminding circulars. Remember, the hustler ***gets the business.*** Use the order getting "X" Boiler Liquid Blotters of which we will furnish you a liberal supply without charge. Keep a carton of "X" Boiler Liquid in your shop at all times.



"X" LABORATORIES—25 West 45th St., New York, N. Y.

Order your carton from your wholesaler today

"X" LIQUID

Repairs Leaks in Steam and Hot Water Heating Systems, High and Low Pressure Boilers